AVIATION

The Oldest American Aeronautical Magazine

AUGUST 31, 1925 Issued Weekly PRICE 10 CENTS

The Italian Airship N2 in flight

VOLUME XIX

NUMBER 9

SPECIAL FEATURES

ITALIAN AIRSHIP N2

THE FOKKER-KANSAS CITY COMPANY

WAR TIME ANTI-AIRCRAFT STATISTICS

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 23, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

At the August Air Race Meeting at Lympne

Aeroplanes fitted with

"Bristol"

CHERUB AIRCOOLED ENGINES

Won 5 out of 6 Races

The Tribute of the Press:

"MORE SWEEPING THAN 1924"

"It will be remembered that during last year's Light Aeroplane Competitions at Lympne the 'Bristol' Entries 'swept the board,' but the successes this year are even more remarkable and they reflect very vividly the extraordinary reliability of the 'Bristol' made product compared with those emanating from other manufacturing centres * * * "The results of the Air Race Meeting at Lympne during the week-end were once again a complete triumph for 'Bristol' manufactures, and it was abundantly proved that amongst light aeroplane engines there is no present day rival to the 'Bristol Cherub.' "

Times Echo

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In the competitions for altitude and speed over a measured course aircraft with "Bristol" Cherub engines

WON 3 out of 4 EVENTS

and second place in the remaining event

If you desire fuller details of the results please write, or cable, us for them.

THE BRISTOL AEROPLANE CO., Ltd.

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AUGUST 31, 1925

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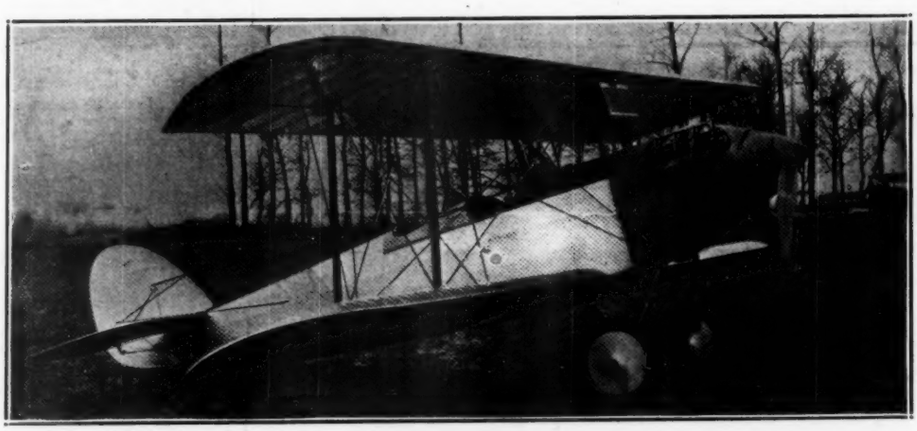

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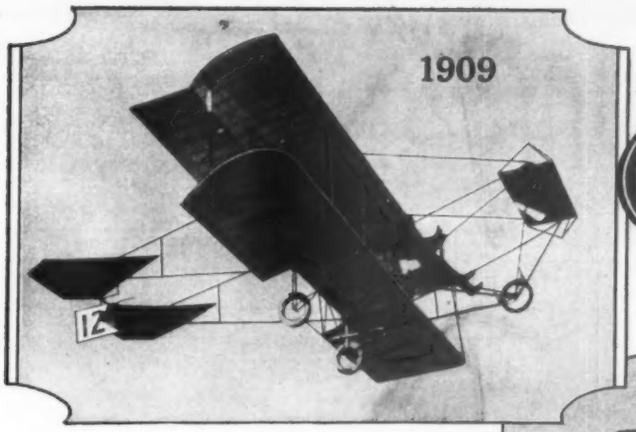

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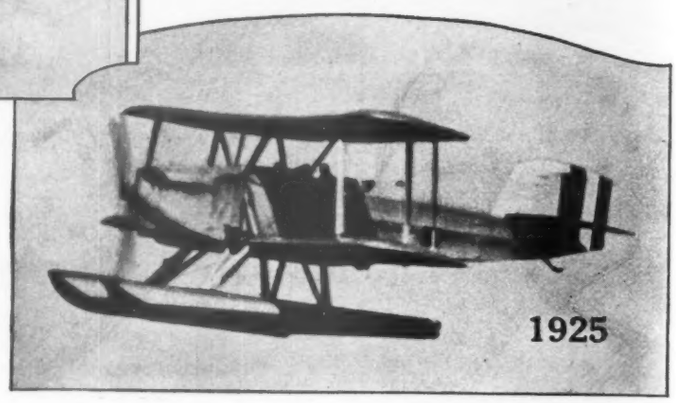

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The Anti-Aircraft Tests

WHILE the anti-aircraft tests have not as yet been completed there are certain definite results that have been accomplished, not the least of which has been to create in the mind of the public an impression of the futility of anti-aircraft as a coast defense weapon. Whether or not this impression has been made by the newspaper accounts which have looked only to the high lights, the fact remains. As a result, the Coast Artillery officers who have worked like men making a last stand against an enemy, probably feel rightfully, that their "hits," constructive or otherwise have gone for naught so far as the public is concerned. When the public is given the stirring news that a "sleeve" has been hit a dozen times out of as many thousand shots, their emotional thrill is not in the direction of the ground but with the pilot who has towed the target through the field of fire.

It is recognized everywhere, and nowhere better than in the Army, that strong measures have to be used to bring about changes in the military and naval mind. The old infantry-cavalry differences were carried on with a bitterness on the part of the infantry, and a hauteur by the cavalry that did not interest the public to the same extent that the air problem has caught the popular imagination. Instead of a controversy among branches of one service, the anti-aircraft contention is upheld by the General Staff of the Army and the General Board of the Navy, while the opposition is championed by the flying personnel of both Services, silently in some quarters perhaps, but nevertheless with that confidence that airmen have come to have as the result of their experiences. The extent to which the partisans have gone is illustrated by the characterization of the tests as "kindergarten stuff" by Colonel Mitchell and comparing the anti-aircraft shooting to "chasing birds on a lawn to put salt on their tails" by Congressman La Guardia who flew several times alongside the towing plane so as to get a close-up view of the bursts.

On the other side, bulletins are issued to the newspapers that state that "the towing plane while maneuvering as *per service conditions* will fly straight for at least one-half mile of each course at constant altitude and constant speed *so as to simulate bombing.*" Nothing is said about the location of the sun with respect to the course, and the visibility that would be taken advantage of, under actual service conditions. The altitude of the tests with the three inch gun has been about five thousand feet so that the gunners could see the target. What would happen at the normal bombing altitude under true service conditions is not stressed. In all fairness, however, it should be remembered that these tests are to be considered tests of accuracy of fire and dependability of ammunition and not a simulated service test. When, however, the impression is created that the conditions are those that would obtain in actual warfare the position the sun, the altitude and the visibility should all be considered.

Similarly, General Summerall said, in speaking of the tests, "It cannot be admitted that an enemy's air forces will find us helpless, in measures for ground defense." Here, again, the impression is created that the Coast Artillery has made the tests with equipment that is available for use against the enemy in actual defense of the country. At Fort Tilden, there were two batteries of four guns each. To defend or to make an enemy force coming through the air feel the effect of anti-aircraft, if they should make an attack on New York, a thousand or more such guns would be required to carry out the General's reassuring words. When the number of anti-aircraft guns and enormous stores of ammunition that would be required to create this condition for all cities on both coasts is totalled, the sum becomes too large to consider, especially when Congress appears to be unconvinced by the demonstrations thus far made.

The publicity of the tests reminds one of the bombing tests made with the battleships. At that time, the tests were considered, and definitely stated to be, tests of accuracy of bombing and efficiency of bombs. But afterward some of the Navy writers made the statement that it took so many hours to sink a ship, and made direct comparisons with the time taken to sink ships by gunfire at Jutland. Similarly, in the present anti-aircraft tests, when the target was hit with a fragment of shrapnel the attacking air force was repulsed and when no hits were made the enemy planes were victorious. These statements are the result of trying to carry water on both shoulders; of calling the exercises tests in one breath and then making remarks about service conditions in the next. To those who have had the opportunity of observing the statements given out by the older services during the last few years, there has seemed to be an effort made to emphasize successes of anti-aviation activities and minimize its achievements.

A particularly good illustration of the uncertainty of "constructive hits" was shown when one target was "shot down." Cheers went up from the ground forces and everybody was happy. There was a real demonstration that could actually be seen. But when the tow line was measured it was found that the hit had merely cut the towing wire ninety-four feet in front of the target. This is an instance of the post mortem verdicts that usually come from the use of constructive areas.

That there has been a real development in anti-aircraft weapons should be welcomed by all fliers. The Ordnance Department and the firing personnel of the Coast Artillery have shown that there are possibilities with ground defense, given a huge appropriation to equip the country with the guns. Whether or not money should be spent on this sort of defense or applied directly to aircraft will be one of the debatable questions resulting from these tests. With the results stated in their true light the Air Service has nothing to fear and should be glad that the tests have been made as they will show just what may be expected of this form of ground attack, should it be developed by an enemy.

Senator Bingham Reports on Government Aviation

Gives President Coolidge Recommendations for an Administration Aircraft Policy

Senator Hiram Bingham of Connecticut has spent several months since Congress adjourned inspecting and visiting both Air Service fields and naval air stations. On Sept. 23, he visited President Coolidge at Swampscott and made suggestions as to what the government could do to aid the aeronautical development of the United States.

It is reported that President Coolidge approved a measure submitted to him for Federal aid to commercial aviation, according to Senator Bingham who spent more than an hour at White Court explaining the need of Federal subsidy or aid to place the United States among the other nations in commercial air progress.

Senator Bingham intends to present to the next Congress bills providing for a Bureau of Aviation under the Department of Commerce, and for Federal aid along practical and economical lines, which the Senator, who was a Lieut. Col. in the Air Service during the war, will induce American capital to invest in commercial air navigation through the establishment of air routes between the larger cities.

Mr. Bingham is against a subsidy proper. He says the American people will not support subsidy legislation. His plan creates a Bureau of Aeronautics in the Department of Commerce which is authorized to charter air routes, license aviators, and do for air navigation what the Bureau of Navigation is now performing for ocean navigation. This bureau would provide airdromes and facilities on land, such as the beacons now used in the postal air service.

Senator Hiram Bingham of Connecticut who is taking the leadership in Congress in forming a government aeronautical policy. He was a Lieut. Col. in the Air Service during the war. He organized the instruction course in the Schools for Military Aeronautics and was Chief of Personnel in the A.E.F. He learned to fly in 1917. His book "An Explorer in the Air Service" was published in 1920.

Airports Planned

Facilities to be given to commercial aviation would be in line with those furnished by the Federal Government for ocean navigation, with the exception of the airdromes and landing stations. It is estimated that these would not cost more than $500,000 to start, as many of the cities, Senator Bingham thinks, would cooperate with the Government in the erection of landing stations.

"This country has been indifferent to aviation, which had its beginning here," Senator Bingham said. "Personally, I would favor some sort of subsidy that would place commercial aviation on a parity with subsidized aviation abroad. I know that sentiment here is opposed to that. Therefore my bill merely gives the facilities that the Federal Government ought to offer for the protection of the public.

"No one would travel unless the aviators are licensed and regulated by the Federal Government. Legislation along this line is essential right off. The building of airdromes and lighted ways should come from Federal money. That is one thing that we can safely embark upon, a form of indirect subsidy. In Europe they give direct subsidies. I do not believe in direct subsidies.

"I favor leasing the *Los Angeles* for commercial experiments, but my experience in aviation during the war and study of it since have convinced me that airships are not practicable for land navigation. They cannot make enough time. The *Los Angeles* cannot develop over sixty-five miles, and with a forty-mile wind against her her speed would be reduced to forty miles, the speed of an express train. She should be used over the water. She is safe and will not come down and can be repaired in the air. I would favor using the *Los Angeles* between San Francisco and Hawaii. There she would travel faster than any ocean ship and be of the utmost service.

Airplanes for Land Service

"You must use airplanes for land commercial navigation if you want speed. Of course, no one would go in the air except to save time. In my opinion an airship between Chicago and New York would not make much better time than an express train when a stiff wind is against her. An airplane would develop 120 mi./hr., and with just as much safety.

"Give our country a commercial air fleet which can be commandeered in time of war and we will be forever safe from invasion. The airplane will be our first line of defense in the future."

Senator Bingham in his conference with the President, pointed out what, in his opinion, ought to be done to improve our military and naval aviation. He left the President convinced that, despite the economy program, Mr. Coolidge would recommend the expenditure of sufficient money to enlarge the aviation branch of the army and navy.

The Reduction of Airplane Flight Test Data to Standard Atmospheric Conditions

N.A.C.A. Report No. 216

This paper was prepared for the National Advisory Committee for Aeronautics by Walter S. Diehl and E. P. Lesley in order to supply the need of practical methods of reducing observed performance to standard conditions with a minmum of labor. The first part gives a very simple approximate method of reducing performance in climb, and is particularly adapted to work not requiring extreme accuracy. The second part gives a somewhat more elaborate and more accurate method which is well suited to general flight test reduction. The third part gives the conventional method of calibrating airspeed indicators and reducing the indicated speeds to true airspeeds. An appendix gives working tables and charts for the standard atmosphere.

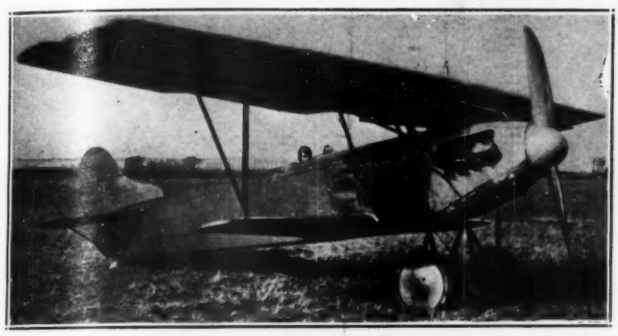
Report No. 216 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

The Fokker-Kansas City Company

Fokker Plans to Become Resident of U.S.A. and Build Here

Anthony H. G. Fokker, airplane manufacturer of Amsterdam, Holland, realizing the limitation of the future development of commercial aircraft in Europe and on account of the geographic and political limitations has decided to move to and become a resident of the United States. Mr. Fokker and his associates, Frank R. Ford and George F. Davies of Ford, Bacon & Davies of New York and Lorillard Spencer of New York, own and control the Atlantic Aircraft Corp. at Hasbrouck Heights, N. J. The Atlantic Aircraft Corp. is now engaged in manufacturing aircraft and metal fuselages for the Air Service.

Realizing limitations for extensive development of manufacture of aircraft in the Atlantic Aircraft Corporation's plant in New Jersey, Mr. Fokker and his associates have definitely determined to construct a manufacturing plant at some favorable point near the center of the United States and begin the development and construction of commercial aircraft on rather an extensive scale.



The Fokker DXIII Pursuit Plane which recently established new World Speed records with loads of 250 kg. and 500 kg. This plane is equipped with a Napier engine

Mr. Fokker and his associates have been induced to go to Kansas City and have entered into a contract which provides for the formation of a new corporation to be known as the Fokker Aircraft Corporation. This company will locate its principal office and manufacturing plant in Kansas City, providing Kansas City investors participate in the financing up to the extent of 50 per cent of the total new financing required by the new corporation, amounting to a total of $2,000,000.

An Underwriting Syndicate is being formed to provide $1,000,000 or 50 per cent of the funds required for present financing.

The New Industries Committee of the Chamber of Commerce of Kansas City has made a report which fully outlines the plans of the new corporation, also a circular giving complete information with reference to the capitalization and financing.

The subscription books have been opened and subscribers have been invited to invest in amounts not less than $5,000 and not exceeding $100,000 each. However this does not preclude the formation of sub-syndicates of groups of individuals who desire to participate as a unit, in the amounts as given.

The underwriting price to syndicate subscribers will be $100 per block consisting of one share of preferred and participating and one share of common stock. Twenty-five per cent of the subscription amount will be due and payable on or about Sept. 1, the balance upon call of the Syndicate Managers as set forth in the Syndicate Agreement.

The Company's Plan

The Fokker Aircraft Corp., which is to be incorporated under the laws of the State of Delaware, will take over all of the stock and the property and business of the Atlantic Aircraft Corp., of Hasbrouck Heights, N. J., which latter company was organized and is owned by Anthony H. G. Fokker of Amsterdam, Holland, Frank R. Ford, George H. Davis and Lorillard Spencer of New York City, and conduct this airplane manufacturing business for North America under the patents and supervision of Mr. Fokker. This corporation, under contract with Mr. Fokker, has the benefit of his experience and patents in the airplane industry, as well as all of the valuable development work and information data of his Holland company and the affiliated European air lines.

These rights to the New Corporation cover the territory of North America, north of and including the Panama Canal Zone, and including the West Indies exclusive of the Dutch Colonies. For the same territory, the New Corporation will be constituted the exclusive agent for the sale of the airplane products of the Holland factories owned by Mr. Fokker.

Mr. Fokker's Experience

Mr. Fokker, a native of Holland, built his first airplane in 1911, and before the war had already established a small airplane manufacturing plant in Germany with attached training school, which operated on a profitable basis. During the war, this small plant was developed into a large concern, building airplanes, engines, and special airplane armament. This concern, with its licensees, turned out over eight thousand Fokker airplanes which established the world reputation of the Fokker product during the war. After the armistice, Mr. Fokker liquidated all his German enterprises and started a new airplane manufacturing company in Amsterdam, Holland (his home), which has turned out progressively each year a larger number of planes, so that, with its international market, it has now become one of the most prominent and profitable businesses of this character in Europe.

Mr. Fokker concentrated his efforts, after the war, on the special development of commercial airplanes which resulted in the successful operations of his airplanes on great parts of the system of European air lines, being used on regular service between Amsterdam, London, Paris, Berlin, Copenhagen and Moscow. They have covered, since 1920, more than four million plane miles, thus collecting very valuable experience and data in this commercial field.

His efficient engineering staff has developed all types of modern military planes, as well as the commercial types of large passenger planes seating up to twelve passengers, the four-seater taxi type, the single or two-seater popular or sport model, etc.

The Fokker plane is noted especially for its safety, ease of operation and control and its superior flying qualities, which are well known to aviators throughout the world. The safety of the Fokker plane was recently demonstrated by Mr. Fokker personally at London, England, with a load of eight passengers, including the Chief of the English Air Ministry and other foremost experts. The complete elimination of danger of stalling and nose diving by this Fokker commercial plane was clearly shown.

The Fokker Aircraft Corporation

The plans of the new corporation provide for the early establishment in Kansas City of its principal office and a factory for the development, assembly and production of airplanes and such parts as can be most advantageously manufactured in that location. This plant, together with the facilities at Hasbrouck Heights, N. J., will be in a position to supply the entire North American market.

The new corporation will own the business conducted by the Atlantic Aircraft Corporation at Hasbrouck Heights, N. J., which has leased, with purchase option, a modern airplane factory, together with the adjacent 200 acre flying field on the Hasbrouck Meadows, six miles from Times Square, New York City, forming an ideal location for the New York airport. An efficient technical organization has been gathered together, including Mr. Fokker and his engineering associates. The

corporation's present business includes contracts with the United States Governemnt, upon which work is now being prosecuted.

The new corporation will sell 15,900 shares of preferred and participating stock and 15,900 shares of common stock for $1,590,000 in cash, or will sell such part thereof as the Board of Directors deems advisable, the proceeds of which will be used for the equipment of the Kansas City plant and for working capital in the development of this business in the commercial field.

With the remaining 4,100 shares of preferred and participating stock and 10,766 shares of common stock, there will be acquired by the new corporation all the stock and property and business of the Atlantic Aircraft Corporation, including the Fokker patents, licenses, and agreements with Mr. Fokker and his Holland company.

Estimated Earnings

The development of the commercial field for the airplane in America is apparently at hand. It is the intention of the management to proceed conservatively in this development, calling upon their subscribers to the securities of the new corporation from time to time for payments upon their subscriptions as the business develops, and as far as practicable, to avoid investing such capital in fixed plant until the industry has become established in its trend. Based upon Mr. Fokker's European experience, this is a conservative and sage course to follow, and should be productive, eventually, of large profits.

Based upon the utilization of the proceeds of the entire issue of 20,000 shares of preferred and participating stock and 26,666 shares of common stock, the Kansas City, New Jersey plants can produce annually one thousand planes of the various types under consideration, from which, when the market is developed, the net profits should average not less than $500 each, or total annual net earnings of $500,000 when and as soon as production has reached this volume.

The management of the new corporation will consist of Mr. Fokker and his technical associates who will have the active cooperation of the new Board of Directors which will be composed of prominent bankers, industrial managers and engineers of Kansas City, Chicago and New York.

In order to insure a continuance of this management, the entire issue of common stock in the new corporation will be deposited in a voting trust for a period of five years from the date of its incorporation, of which the three trustees will be Anthony H. G. Fokker Joseph F. Porter of Kansas City and Frank R. Ford of New York, or their nominees. The common stock will be deposited with the New England National Bank and Trust Company, of Kansas City, Mo., as depositary, which will issue the usual trust certificates therefor. Mr. Fokker will be granted an option for five years from the date of incorporation of the new corporation to purchase 5,300 shares of common stock, (being one-third of the common stock sold with this issue of preferred and participating stock) at $200 per share, the proceeds thereof to belong to the subscribers pro rata.

The statement of the Committee acting for the Kansas City Syndicate gives many interesting facts as the result of their investigation. In brief, it is as follows:

At the present time there are approximately ten companies in the United States engaged in the manufacture of airplanes, all of which are engaged almost exclusively in Army and Navy work. With the exception of one or two small concerns, all the plants are located on or near both east and west seaboards, or near the Canadian Border. There are a few other concerns of minor importance attempting the manufacture of airplanes.

Until recently, the development of aircraft in America has been largely for governmental purposes. However, there are many small commercial transportation companies and a few very large ones being developed throughout the United States. Furthermore, the government has demonstrated air mail routes are here to stay and extensive development along such lines is expected in the near future. The development of numerous flying fields and small air taxi concerns is rapidly converting a great potential market into an actuality.

The following are the market possibilities for efficient, well-constructed aircraft:

1. Various commercial air and transportation routes being estab[illegible] and developed.
2. [illegible] routes to be operated by the United States government.
3. Air Mail routes to be operated by private subsidized air transportation companies.
4. Private uses by firms and individuals requiring rapid transportation.
5. The many hundred air taxi transportation companies.
6. Pleasure and recreation.
7. Great export trade which is now absolutely open and ripe for development.

Anthony H. G. Fokker

Five hundred commercial planes are being used in regular commercial air transportation service in Europe. Based upon the same respective possibilities, the United States alone would require immediately 5,000 planes at a cost of $100,000,000. The development of commercial air transportation in Europe is far ahead of the United States.

The United States Government New York—San Francisco Air Mail Route, which operates one ship in each direction every 24 hr., requires one ship for every fifty miles of mail route, or a total of fifty ships.

On the same basis, the proposed air mail routes covering 25,000 mi. would require 500 ships costing $10,000,000 which would have to be replaced annually. A conservative estimate

of the near future development is four times the above.

An estimated ultimate development of the commercial plane will reach the point where there will be one in use for each 1,000 population is concurred in by authorities as not at all excessive. Should this saturation point be attained, 100,000 crafts of various kinds would be required, which will mean 30,000 new units annually for replacements. No authority will contend that the use of 100,000 ships in this country will be the maximum.

General Plans of New Corporation

Generally, it is Mr. Fokker's plan to establish the principal manufacturing plant in the interior of the United States and proceed to develop as rapidly as consistent commercial craft suitable to the uses in the United States and also to foster and assist in building up the various transportation companies for the use of airlines. He proposes to undertake only such government work as may be profitable to the corporation.

Location

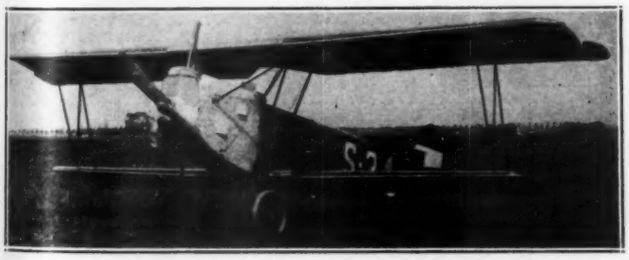
The establishment of the principal manufacturing plant in Kansas City is considered exceedingly favorable as compared with other localities, for the following reasons:

1. Greater security in time of war from enemy aircraft.
2. Natural possibilites for locating important commercial air transportation routes in all directions, radiating from Kansas City.
3. Close proximity to the many proposed air mail routes and commercial transportation routes being planned for the near future.
4. Exceptionally favorable labor conditions and a good supply of trained woodworking and metal mechanics needed in aircraft production.
5. Topographic conditions favorable to the development of flying.

Management

The management of the company will be in the hands of Mr. Fokker and his associates, who are experts in industrial development and operation in the United States, and it is believed and expected that with a production of 300 to 500 planes annually, or over, that the company can be operated at a profit.

Mr. Fokker has decided to move definitely from Amsterdam, Holland, to the United States. He wants to devote all of his time, energy and ability to America. He was deeply and sincerely fascinated by the possibilities of this country when he became acquainted with them. It is his desire to become an American citizen as soon as possible.



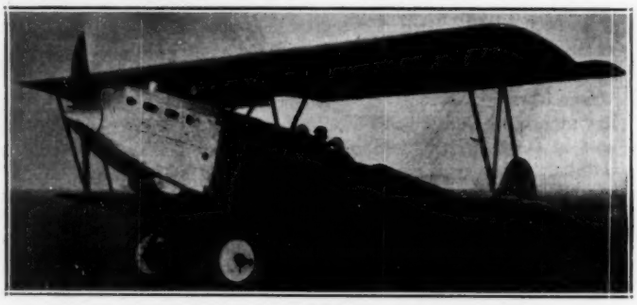
The latest Fokker observation plane the C5

Mr. Fokker's close cooperation with, and assistance in the development of commercial airlines in Europe give him a most valuable experience in the manufacture and development of the industry in the country. Impressed with the general geographical and political limitations of Holland and Europe in general, he sees great possibilities in the United States where such limitations are non-existent.

Purpose of Stock Issue

The $1,590,000 cash received by the company will be used for the following purposes.

1. The establishment of a plant in Kansas City for the development and marketing of aircraft suitable to conditions in North America.
2. The purchase of engines and other stock necessary for the production of a number of airplanes of different types for which there is an existing and increasing demand for the preparation for economical quantity production and to a limited extent for participation in the development of airway transportation. In this connection it is proposed to import one three engined and a few single engined large passenger carrying commercial planes from Mr. Fokker's Holland plant which will be needed immediately for demonstration purposes and to serve as models for the proposed production in this country.
3. The improvement of the flying field and plant at Hasbrouck Heights, N. J., as an important air terminal and repair station.
4. The perfection of a sales organization and flying field personnel necessary for the proper development of the airplane industry.



The SIII. A training plane constructed by the Fokker company of Holland

The detailed operation program and the use of the money apportioned over the next twelve months has been studied by the committee. Provisions are made that if the rapid development of the business which Mr. Fokker foresees does not come up to expectations the rate of the expenditures are decreased according to the actual necessitites. The capital is sufficient to carry on, if necessary, several years of slower development than is expected but also to meet certain requirements of immediate expansion if conditions warrant it in the very near future. Mr. Fokker is unwilling to make commitments with reference to the possibilities in America because of the size and magnitude, but it is conservatively estimated that with the expenditure of the money as above outlined and the facilities provided therefrom, the Kansas City—New Jersey plants can very easily manufacture annually 1,000 planes varying from the average single seater to the large airlines type, and that the next profits on these planes should average not less than $500 each. This would yield an annual net earning of $500,000 and this production should be reached in two or three years' time.

Horatio Barber Returns

Horatio Barber, President of Barber & Baldwin, Inc., Aviation Underwriters and Aeronautical Engineers, of 30 East 42nd Street, N. Y., sailed from Southampton per the s.s. "Berengaria" on Aug. 15, and returned to his office on the 21st. Messrs. Barber & Ballwin, Inc. established a branch office last year at 31, Lombard Street, London, England, and it is reported that the company's activities are steadily increasing.

Fast Mapping Service

An aerial map of Arthur Kill was put on exhibition July 29 at the Port Authorities office at 11 Broadway, during the hearings on the proposed construction of the bridges to connect Staten Island and the Jersey mainland. This map was made in the record time of fourteen hours from the time that the negatives were delivered to the laboratories of the Fairchild Aerial Surveys, Inc., 270 West 38th St., New York. The vertical aerial photographs were taken by photographer A. O. Russell in a camera plane piloted by E. P. Lott. Twenty exposures were made at exactly noon and twenty more at 2 p. m. The plane then returned to its base at Garden City, L. I. and the negatives were rushed to New York.

Description of the Goodyear Pilgrim

By H. T. KRAFT

Chief Aeronautic Engineer, The Goodyear Tire & Rubber Co.

The general layout of The Pilgrim deviates considerably from past practice of non-rigid airship design, the principal changes being in the suspension, nose construction, keel construction, and fin design. The ship has some characteristics of a semi-rigid which allow it to be housed in the hangar at zero pressure without serious deformation of the hull and thereby considerably reduces fabric tension and the occasion for high diffusion.

Keel Weighs Only 30 Pounds

The keel is a magnesium girder of triangular section, tapering at the ends and is 21 ft. long. The keel weighs but 30 lb. and is laced on the inside of the envelope after the ship is inflated. It is readily removable and full facilities are offered for adjusting any of the suspension cables that radiate to the top of the envelope and there spread out into two longitudinal catenaries. The result is that the ship maintains practically a circular cross section at all times except for a slight indentation at the point of attachment at the top of the envelope. The car is suspended to this keel by a series of wires which are very short and rigid and the difficulty of perfect adjustment of these cables is entirely eliminated.

At the rear of the car there is a steel "wishbone" which fastens to the keel at the center of gravity of the engine. This wishbone acts primarily as a torque arm to relieve the car of the torsional reaction of the engine. The engine is mounted to a combination rubber and fabric base which is fastened to the car, eliminating any direct mechanical connection between the power plant and the car. The upper end of the wishbone is also fitted with similar material to dampen the vibration and incorporates a ball and socket joint to allow free articulation at the point of attachment to the keel. A Reed four blade propeller with spinner is used which gives a higher efficiency than the wooden type. The propeller weighs but 32 lb.

The entire car is constructed of steel tubing of 0.03 in. wall 0.75 in. diameter. The car is covered with 0.02 in. magnesium sheeting with watch case crystal celluloid windows of heavy gage. One section of the car was given a 5,000 lb. static load before it failed, which indicates that the car is very light and strong and will withstand severe landing shocks. The interior of the car is upholstered in blue mohair velour with mahogany finished veneer below the window lines. Seats are provided for one pilot, two passengers and a cockpit at the rear for the motor mechanic.

Power Plant Arrangements

The fuel system consists of a Stewart Vacuum tank which works satisfactorily on a small engine of this horsepower. The engine is a 60 hp. Wright Gale (L-4), three cylinder radial and has a crescent shape exhaust manifold leading the exhaust down to a muffler which considerably reduces the exhaust noises. The instruments and controls are conveniently located on board ahead of the pilot with throttle and spark control arranged on the left side of the pilot seat. The rudder bar is provided for directional control with the elevator wheel at the right side of the pilot's seat for vertical control.

The envelope has a capacity of 50,000 cu. ft. of helium gas and has an aspect ratio of 3.4 to 1. Two valves are provided, one for discharging gas in extreme emergencies and the other for ballonet control. During all general flying conditions there should be no cause for valving helium in view of the great controlability of the ship dynamically.

The nose cone construction is a rather radical departure from the usual design. The structure consists of a tube 16 ft. long, 3.5 in. in diameter of 0.03 in. wall and has six radiating cables which attach to the interior of the envelope. These cables greatly tend to hold the nose out even at zero pressure. It is of the self energizing type and resembles a bow and arrow construction where the tube represents the arrow. Stability is an item of importance on a small ship of this type and large surfaces well streamlined were decided upon to give the ship excellent maneuvering qualities.

The envelope is 105 ft. long and 31 ft. 6 in. in diameter. This shape being selected because of less resistance as well as being economical from the standpoint of surface area. The hull has but one ballonet with its center of volume located over the center of disposable load so that there should never

Performance

be any serious out-of-trim conditions during flight.

The ship has a speed of 51 m.p.h. and a fuel consumption of 4.6 gal. per hr. While provisions are made for carrying two passengers and the pilot, the number carried depends upon the desired cruising radius and the desired ceiling. The gasoline tank has a capacity of 32 gal.

A small mooring mast attachment is on the ship. It consists of a 32 in. diameter aluminum spinning securely bolted to a fabric reinforcement located on the under side of the ship near the nose. This was done for simplicity of attachment and the satisfaction of having a mast that is but 16 ft. high which can be easily transported and erected in a few minutes. The release is either controlled from the ground or from the car and the mechanism consists of a doll pin which is withdrawn by a cord and permits the ship to be released at will.

Characteristics

TYPE AD AIRSHIP

HULL

Envelope

Volume (theoretical)	50,068 cu. ft.
Volume (with 5% stretch)	52,570 cu. ft.
Length	105 ft. 6 in.
Diameter of envelope	31 ft. 1 in.
Height of ship	44 ft. 0 in.
Width of ship	40.7 ft.
Fineness of ratio	3.4 ft.
Surface area	881 sq. yd.

Ballonet

Volume	13,750 cu. ft.
Per cent of envelope volume	275
Surface area	219.6 sq. yd.
Ceiling of ship (based on bal. vol.)	10,500 ft.

Control and Stabilizing Surfaces

	Area sq. ft.	*Act. wt.*
Lower vertical fin	98	43 lb.
Upper vertical fin	127	50 lb.
Horizontal fins (2)	238	94.75 lb.
Rudder	54.5	24.75 lb.
Elevators (2)	99	49.10 lb.
Total	616.5	261.60 lb.

CAR

General Dimensions and Characteristics

Length	14 ft. 6 in.
Width	3 ft. 9 in.
Height	5 ft. 9 in.
Structure	Steel tubing
Covering	Magnesium
Seats	4

Power Plant Characteristics

Motor (1)	60 hp. Lawrence
R.p.m. @ 60 hp.	1850
Propeller	4 blade, Curtiss-Reed dural
Diameter	6 ft. 5 in.

MISCELLANEOUS WEIGHTS

Hull

Envelope	619 lb.
Ballonet	155 lb.
Surfaces	262 lb.
Envelope accessories	312 lb.
Total	1348 lb.

Car

Structure	409 lb.
Motor	175 lb.
Propeller	29 lb.
Suspension beam	62 lb.
Total	675 lb.

LIFT AND WEIGHT SUMMARY

Gross lift (helium) @ 56 1-1000 vol. = 52570	2944 lb.
Hull dead weights	1348 lb.
Car dead weights	675 lb.
Useful load	921 lb.
Useful load per cent of total lift	32.4 lb.

DISTRIBUTION OF USEFUL LOAD

Pilot	180 lb.
Passenger	180 lb.
Mechanician	180 lb.
Parachutes (3)	60 lb.
Gasoline and oil	214 lb.
Water ballast	107 lb.
Total	921 lb.

PERFORMANCE DATA

	Full power	*Half power*
Fuel and oil consumption—hp./hr.	0.54 lb.	0.27 lb.
Horsepower	60	30
Fuel and oil consumption—hr.	32.4 lb.	16.2 lb.
Endurance—hours	6.61	13.22
Speed mi./hr.—estimated	50	39.7
Range—mile	330	525

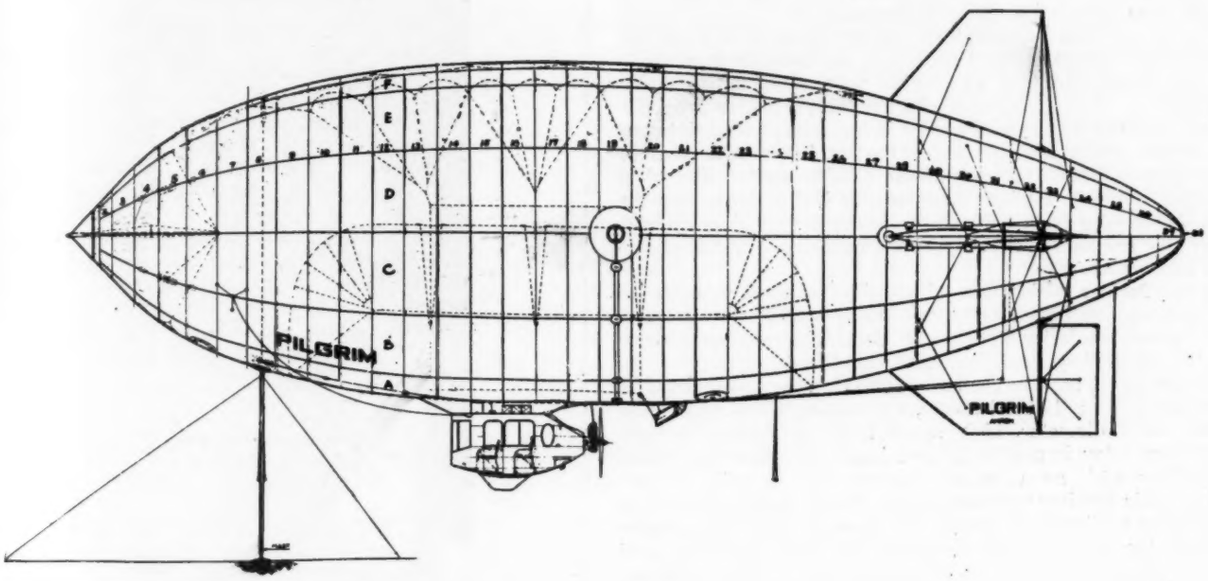
50% increase in range if gasoline is substituted for water ballast

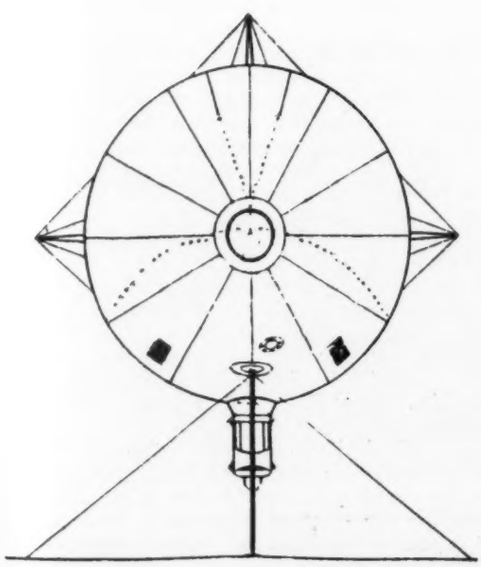
Curtiss Company Host to Racers

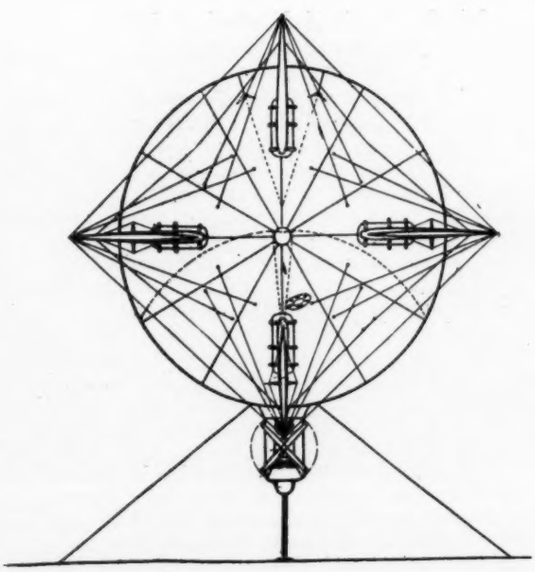
Announcement has just been made that visiting Army and Navy officers and civilian pilots who take part in the 1925 Pulitzer Races at Mitchel Field, L. I., will be supplied with free lodging through the courtesy of the Curtiss Company. During the meet, all contestants who wish to take advantage of the offer will be taken care of on the second and third floors of the executive building of the company at their factory at Garden City.

One floor will be assigned to Army and Navy officers and one to civilian pilots and showers, cots and other facilities have been arranged. The restaurant at the factory will be kept open at all times during the races and a bus service will be run on a half hourly schedule from Mitchel Field with a stop at the Curtiss Plant.

Those desiring to avail themselves of these accommodations should notify C. S. Jones of the Curtiss Company at Garden City, L. I., or the offices of the New York 1925 Air Races, Inc., at 30 East 42nd Street, N. Y. Reservations should be sent in well in advance so that the necessary arrangements can be made.







The Leitner-Watts Metal Propeller

Uses Separate Hollow Steel Blades Set in Adjustable Hub

The British Royal Air Force have lately adopted the Leitner-Watts propeller manufactured by Metal Propellers, Ltd., as a standard service propeller. This propeller is no new invention, but the result of ten years work and research by Henry Leitner, M.I.E.E., and Dr. Watts, D.Sc., Assoc. M. Inst. C.E., F.R.Ae.S., and an expenditure of over a quarter-million dollars in laboratory and other aerodynamical experiments.

Blades Are Separate

The above mentioned company has recently been formed, with the Master of Elibank as its chairman, to fill orders for the L-W propeller both for the British government and most of the leading aircraft construction manufacturers in Great Britain. For this purpose an extensive factory covering two and three-quarter acres of land has been acquired and equipped at Croydon with a capacity of 200 blades per week, apart from the section for hub manufacture.

One of the most important advantages of the L-W propeller is that it is not an integral propeller, but has interchangeable blades fitting into two way, three way or four way hubs, according to the number of blades for the particular propeller being used for any special engine or machine. With integral propellers should a blade crack the whole propeller has to be scrapped, but in the case of the L-W propeller all that is entailed owing to its interchangeability is the fixing into the hub socket of a fresh blade from stores, for all blades of the same size are made interchangeable, having a common standard of balance.

Some further advantages of metal over wood may be instanced, such as immunity from climatic conditions, sea water and spray the latter both being troublesome elements for wooden propellers used on marine work.

The material used in the construction of the L-W propeller is super-rolled mild steel sheets, but for certain specific cases where small diameter, high speed tips are needed, a light aluminum alloy is used. It is of interest to note that Metal Propellers, Ltd., are at present undertaking an order for the British Air Ministry for duralumin blades, and it should be noted that unlike similar products by other firms, these blades possess the same interchangeability as those made in steel and in fact fit into the identical steel hubs. The necessary taper in thickness for the steel blades is obtained by using laminated construction, which also tends to damp out vibration.

Blade Angle Adjusted at Hub

The blades can be adjusted in the hubs minutely through a wide range of pitch, which enables the propeller on any individual engine or airplane to function with the maximum efficiency. The pitch is adjusted by a species of vernier with a marked datum line on the hub to work from. The blade root, or butt, is so constructed that it is impossible, under stresses arising even with extreme peripheral speeds which may occur in use, for the blade to be torn out of the central hub.

The steel hubs are made up from forgings in two halves, and carry the Hucks starter, claw, and gun cam flange, needed for the Constantinesco interrupter gear. Several engine makers in England, including Messrs. Rolls-Royce, Messrs. D. Napier & Sons, and Messrs. The Bristol Aeroplane Co., Ltd., are now making the L-W hub under license, or alternatively a hub of their own construction to take L-W blades, integral with the engine and thus materially reducing the expense and weight of this item.

The length of life of the steel propeller has been found only to be limited by the durability of the steel. Used by the Instone Airline on cross-channel service, one of the L-W propellers flew a distance equivalent to three times round the world. At the end of this distance the propeller was subjected to an expert examination and was found to be in perfect condition throughout.

A 16 foot L-W metal propeller on the test stand

With steel construction the metal gives ample warning of fatigue, minute cracks extending upward from the center rivet being the first sign, and after these small cracks at first appear it has been found that the propeller is perfectly safe to fly for 80 to 100 hr. before these cracks become in any way dangerous. It will thus be seen that unlike light alloy construction, in which if the propeller is going to fail it is liable to an instantaneous burst, the steel gives such warning that a pilot is enabled to complete his journey, however long this may be, in perfect safety.

With the need for the utmost efficiency at heights the L-W propeller is now being supplied to the British Air Ministry for the supercharged Napier Lioness engines fitted to the new type of service aircraft, while the largest single engined airplane in the world, the Blackburn Cubaroo, fitted with a 1000 hp. Napier Lion engine has performed all its tests with the L-W propeller.

Another recent airplane, the Avro Andover commercial freight and passenger carrier, which is fitted with the Rolls-Royce Condor engine and is now flying on the Imperial Airways London to Paris line, is using the L-W steel propeller blades fitted into a hub made by Messrs. Rolls-Royce, Ltd., specially for these blades.

Aircraft firms in England are now turning their eyes toward the variable pitch propeller with its obvious advantages particularly for high altitude work, and at the present time Metal Propellers, Ltd., are working on blades for several aircraft construction firms, which are expected to be fitted into their experimental variable pitch hubs.

Believing that complicated mechanism has up to date delayed the progress of the variable pitch propeller, Henry Leitner, M.I.E.E., the technical director of Metal Propellers, Ltd., has invented an automatically variable pitch hub, which in its functioning is so simple as at first sight to seem absurd. There is no machinery, no gear wheels or levers and cranks in this invention, but by virtue of harnessing centrifugal force and thrust, and utilizing their resultant force, the pitch of the propeller varies itself to suit each and every different moment. This propeller, now being produced in full scale, has been much praised by the Air Ministry who have placed an order for some experimental propellers.

Metal Propellers, Ltd., have already initiated an international organization, the object of which is to form companies, or make other adequate arrangements in the European and other countries of the world, including the United States, so that L-W propeller and hub, the various points and design of which are protected by patents throughout the globe can be produced for these markets.

It is believed that there lies an ever increasing market for the production throughout the world of this steel propeller, and it is expected that arrangements for their manufacture on a large scale may be completed in the near future.

Mules Deadlier than Planes

Despite newspaper reports to the contrary, airplane accidents are less in number than those due to other causes. Speaking before a conference of aeronautical and business officials at the Ford Airport, Dearborn, Mich., Maj. R. W. Schroeder, A.S., U.S.A., former chief test pilot of the Army Air Service at McCook Field, recently said:

"A man in a plane engaged in ordinary straightaway flying is safer than on the ground. I have noted that during a recent year eight persons lost their lives in the entire United States while engaged in civilian flying, while during the same year, in the State of Missouri alone, 80 persons—just ten times as many—were kicked to death by mules."

Speed Carriers' Construction

An effort is being made by the Navy Department to speed up the construction of the aircraft carriers U.S.S. Saratoga and Lexington. Encouragement has been given the authorities in the Navy Department by the Director of the Budget, who, as he has announced, will approve larger appropriations for the Air Service, than were made by Congress last year. The department is anxious to have both of these large ships in commission at as early a date as possible, and additional funds will make this possible.

The Saratoga, which was launched this Spring under the regular schedule, should be placed in commission in October. With an increase of appropriations it is believed that this date can be advanced. The Lexington will be launched about the same time, but will be further advanced than her sister ship.

Weather Bureau Aeronautical Movies

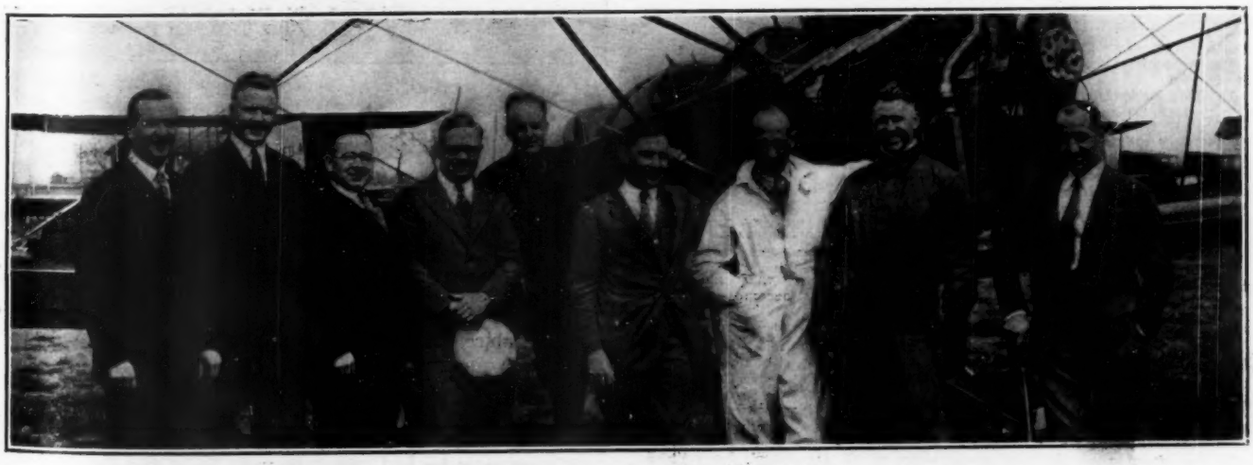
Two new motion pictures just released by the United States Department of Agriculture show in some detail the upper-air observation work that is being conducted by the Weather Bureau, and one of them gives incidentally a film review of important American aeronautical activities.

The first film, Exploring the Upper Air, is one reel in length, and deals in a popular manner with the scientific side of upper-air observation work. It depicts flights by Weather Bureau meteorologists in airplanes, dirigible balloons and free balloons in the study of upper-air conditions for weather forecasting. An airplane flight above the clouds, an airship journey in the neighborhood of St. Louis, the beginning and the end of a free balloon flight, the making of a "dust count" high above the earth's surface, are among the striking scenes.

The second film, Watching the Weather Above, is two reels long. It shows the daily work of making upper-air observations at numerous stations by means of large kites and "pilot" balloons, the assembling of the information at three forecast centers—San Francisco, Chicago and Washington—and the distribution of "flying weather" forecasts from these centers to the fourteen aviation forecast zones into which the United States is divided. But first the film shows the need for the forecast by means of a succession of pictures which constitute a fairly complete review of American aeronautics. It depicts flights by Army airplanes and dirigible balloons. Navy seaplanes, the great Navy airships "Shenandoah" and "Los Angeles," the progress of the Air Mail planes from New York to San Francisco, the detection of forest fires by airplanes, and the "dusting" of cotton and other crops to kill insects.

The films will be circulated through the educational film service of the Department of Agriculture and the cooperating State institutions. Copies may be borrowed for limited periods, or complete new prints may be purchased by authorized institutions at the manufacturing charge.

Officers of Consolidated Aircraft Corp. of Buffalo with Air Service Visitors



Left to right: George Newman, factory manager; Ray P. Whitman, chief inspector; Thomas Kenny, secretary-treasurer; V. E. Clark, vice president and chief engineer; R. H. Fleet, president and general manager; J. L. Kelley, government inspector; Lieut. K. B. Wolfe, Brooks Field; Lieut. Carl A. Cover, Wilbur Wright Field, and Major Ralph Royce, commanding officer, Brooks Field

Police Urge Regulation of Aircraft

Northwest Association Takes Active Interest in Aircraft Uses

At the annual convention of the Northwest Association of Sheriffs and Police held at Victoria, B. C., the last week in July, resolutions and recommendations were passed regarding the regulation of aircraft. This Association covers eleven Pacific Coast and Pacific Northwest states and provinces. It is one of the largest associations of its kind, embracing all law enforcement officials—federal, state, provincial and county.

Roy C. Lyle, federal prohibition director of Seattle, Wash., has investigated the use of aircraft for bootlegging and was one of those who were active in securing the adoption of the resolutions. It was stated that the use of aircraft by international criminals was increasing and law enforcement officers could no longer ignore it. While there is a registration law in Canada, there is no corresponding regulatory law in the United States. The resolutions and recommendations adopted are printed below:

Whereas traffic by aircraft is now a reality and rapidly increasing in use, and,

Whereas the criminal classes are already making use of aircraft to commit crime and evade capture, and,

Whereas there is no legislation at this time regulating and controlling aircraft traffic, in the United States of America,

THEREFORE BE IT RESOLVED that we urge the enactment of basic legislation by the Federal Government and uniform legislation by the various states.

BE IT FURTHER RESOLVED that we urge the making and approval of a treaty betwen the United States of America and the Dominion of Canada regulating international aviation.

BE IT FURTHER RESOLVED that the Northwest Association of Sheriffs and Police use its efforts to enlist the aid of all organizations and associations of law enforcing officials and civic bodies, as well as members of Congress and the various state legislatures to secure the early enactment of the necessary legislation.

Conclusions and Findings

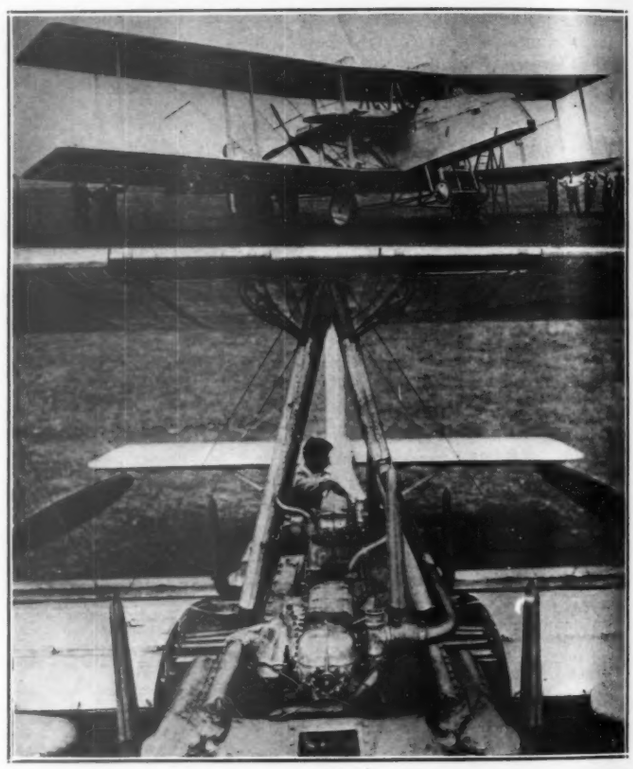
1. The Committee on Aircraft in Crime found that the use of aircraft in crime exists, especially in smuggling of contraband goods, highly dutiable articles, liquor, narcotics and aliens. The use by criminals of aircraft in the commission of crime is practicable and increasing; its possibilities are varied, menacing and difficult to combat.
2. It is developing an especially daring, vicious, unscrupulous, dangerous type of criminal—one difficult to handle.
3. The use of aircraft by law officials in the prevention and detection of crime has been demonstrated as practical and is a near necessity. Aircraft are already used in a multitude of ways and their use should be capitalized by law enforcement officers.
4. Legislation and regulation in the United States, which basically should be Federal, are an immediate necessity for law enforcement generally, for proper cooperation with Canada, and for public safety, public health and proper commercial development.
5. Enforcement of laws governing operation of aircraft is difficult but much can be done to minimize the violation and control offenders.
6. Aero clubs and aero association regulations and aircraft underwriters' requirements are capable of much assistance in controlling this problem.
7. The itinerant or "Gypsy" flier has been helpful as a pioneer in the development of aviation but when unregulated is a menace and he should be properly controlled.

Recommendations

The Committee on Aircraft in Crime submitted the following recommendations:

1. The immediate passage of Federal legislation by the United States, which shall be basic and specially providing for licensing of pilots and machines and proper periodical inspections and for proper flying regulations.
2. We recommend that this association support and urge early action on aircraft legislation by the United States Congress, and that a special committee be appointed from this Association to assist in securing such legislation.
3. As a general proposition, your committee does not favor any legislation or regulation except Federal, but pending Federal legislation, where urgent necessity seems to justify the same, we suggest the passage of city ordinances, and state legislation along the lines of the Uniform State Law for Aeronautics, but that this legislation so far as possible be temporary and to become inoperative upon the passage of proper Federal legislation.
4. The adoption of the International Regulation by the United States.
5. Pending adoption of International Regulations by the United States, immediately some form of agreement or treaty with the Canadian Government, adequately governing the international use of aircraft between the two countries.
6. Enlisting the co-operation of Aero Clubs and insurance companies, and the use of their regulations is generally favored and recommended as of special importance pending proper Federal action.
7. We recommend that the co-operation of all air patrols be enlisted.
8. We recommend the investigation of and use of aircraft by enforcement officials where practicable.
9. We recommend the system of offering rewards for information or apprehension of criminal aircraft.
10. In the interest of public safety because of misuse by improper persons, we are opposed to the indiscriminate sale of government property.
11. The early establishment of a central Bureau for the collection of data, statistics, etc., relating to aircraft crime and aircraft criminals is recommended.
12. We recommend that at the next annual Convention an entire session be devoted to special phases of the subject of aircraft in crime, and we suggest among topics of special interest the following:
    International aircraft crime.
    Methods of use of aircraft in crime by officers.
    Federal Laws.
    State Laws.
    City Ordnances.
    Expense, operation, etc., of aircraft by officers.
    The general subject of aerial jurisprudence.
    Penalties and rewards.
    Air traffic regulations.
13. We recommend that a permanent committee on aircraft in crime be appointed and that further investigation of the subject be continued.

A Central Engine Room Airplane



Wide World Photo

The Boulton & Paul "Bodmin." It is powered with two Napier Lion engines driving four propellers

Light Airplane Design

A comprehensive solution of problems involved in light airplane design will be found in Technical Memorandum No. 326 just issued by the National Advisory Committee for Aeronautics.

The author, Ivan H. Driggs, has prepared a number of charts, tables, and simple equations concerning materials, power, take-off, climbing, ceiling, etc. A set of outline drawings with a longitudinal balance diagram for a complete light airplane is also given. The designer of such an airplane will find this Technical Memorandum useful.

A copy may be had, upon request, from the National Advisory Committee for Aeronautics, Room 3341, Navy Building, 17th & B Streets, N. W., Washington, D. C.

War Department Anti-Aircraft Record

Coast Artillery Gives Official Records Made During War

There have been so many statements made regarding the success of anti-aircraft guns in bringing down aircraft during the war that AVIATION requested the Chief of Coast Artillery to give the official figures on which some of the anti-aircraft gun advocates base their claims.

In reply to a series of questions much interesting information was received and is published at this time when anti-aircraft discussion is agitating the public as never before. The questions asked were based on statements attributed to the Coast Artillery officers and are printed in italics; the answers in roman type.

Will you, if you have it available, give us a reference to the "official record" which states that the "French Army, with 75 mm. guns, brought down a plane for every 3200 shots." Also where we can find "The American record, with three inch guns, was a plane for every 605 shots" and "the British was 1500 shots per plane."

a. Extract from M-A Report No. A-5256—Italy—Ministry of War, General Aviation Headquarters.

"The statistics of the allied armies all based on official documents yield an equal percentage (Germany 1520 Aircraft brought down by the artillery out of a total of 6554 aircraft brought down by the aviation service. France 500 aircraft brought down by artillery out of a total of about 2000 brought down by the aviation service.).

"In France, still another high percentage has been reached, and it will perhaps serve still better to give an idea of the efficiency of anti-aircraft artillery, the relation between the number of shots actually fired and the number of aircraft brought down. Now these statistics have shown that for every airplane brought down, about 11,000 shots were required in 1916 and that their number was reduced to about 7500 in 1918 and this progress must be appraised in relation also to the progress which aviation made in the same period, gaining in altitude, velocity and ease of manipulation.

"These statistics have been compiled so as to include all guns which executed anti-aircraft fire. If then we limit them to special anti-aircraft guns alone, the proportion descends rapidly in *1918 to one airplane brought down for every 3200 shots fired* and this number can be judged at its true value, if it is borne in mind that it is much less than that proved necessary for field artillery to destroy one enemy gun."

b. A similar statement to that given above in *a* is contained in the M-A Report No. 8321-W, France, Dec. 26, 1923, Title—Chef d'Escadron Fontaine, Ministers de la Guerre (Artillery Direction).

c. Extract from Report of Chief of Artillery, A.E.F.

"With the exception of the 23d A.A. Battery (Battery B, 1st A.A. Battalion) which had two auto-cannons with complete equipment, which had been purchased from the French, our artillery personnel at the front were serving as additional relief with French troops. In a few cases, the number of French troops were so reduced that our personnel took entire charge.

"The results of those batteries which brought down one or more planes during this period are as follows:—

Organization	*Dates*	*Planes brought down.*	*Number of shots fired.*
5th A.A. Battery	Aug. 25-Oct. 30.	1	520
22d A.A. Battery (Btry A. 1st A.A. Bn).	Aug. 22-Nov. 11.	2	2116
23d A.A. Battery (Btry B. 1st A.A. Bn).	July 17-Nov. 11.	9	5092
27th A.A. Battery (Btry A. 2d A.A. Btry).	Sept. 11-Nov. 11.	3	1028
28th A.A. Battery (Btry B. 2d A.A. Btry).	Sept. 11-Nov. 11	2	1517
Total		17	10272

Average number of shots per plane—605

d. A similar statement to that given in *c* above is contained in the report of Anti-aircraft Service, Headquarters, Anti-aircraft Service, American Expeditionary Forces, France, Dec. 28, 1918."

The following statement has been obtained from the Office, Chief of Ordnance, War Department, Washington, D. C. The British report the following as the average number of shots required by their anti-aircraft artillery to bring down a plane:—

Prior to 1917—No record; 1917—8000 rounds; 1918—4550 rounds; Last part 1918—1500 rounds.

Does the Coast Artillery claim that at the Fortress Monroe Tests if they were firing at a bombing plane "40 ft. long 75 ft. wide and 15 ft. high" that hits would have been made?

The Coast Artillery Corps claims that three bursts occurred within the space which constitutes the hypothetical target for 3 in. anti-aircraft gun fire. This space is described as follows:—

35 yd. short and 15 yd. over, as observed from the towing plane.

50 yd. high and 50 yd. low, as observed from the towing plane.

50 yd. right and 50 yd. left, as observed from the battery.

This hypothetical target represents the space surrounding a plane within which, if a 3 in. high explosive shell explodes, a reasonable chance exists that the plane will sustain serious damage. It is based upon the best information at present available as to the destructive radius of this shell. Experiments have recently been undertaken by the Ordnance Department of the Army with a view to accumulating more data bearing on this question, which may result in a change being made in the dimensions of this hypothetical target.

Has the Coast Artillery a "corrector" which is designed for firing at aircraft with speeds over 100 mi./hr.? 150 mi./hr?

The ability of a corrector to operate as intended depends upon the angular travel of the target, which in turn depends not only upon the speed of the target but its range. In the demonstration at Ft. Monroe on March 6, the ranges were made short—presumably so as to make sure that the audience would be able to see plainly the target and the shell bursts. This fact, together with the wind conditions which latter made possible a speed of approximatly 130 mi./hr. by the towing plane, made it impossible to use the corrector with accurate results. A specific answer to this question, as you will perceive, can not be given. Conditions existing in this demonstration were reported as being beyond the limitations of the instrument at present supplied, but it is expected that this deficiency will be corrected.

From the above it will be seen that the records of the War Department show that the Franco-American anti-aircraft batteries operating on the front just before the armistice claim to have brought down one plane for every 605 shots fired. The British claim that at the latter part of 1918 they were bringing down one plane for every 1500 shots fired. The French claim one airplane brought down for every 3200 shots fired.

The above figures will be helpful in making comparisons with the number of constructive hits made in the area surrounding the sleeve targets that have been towed by airplanes this summer. It will be noted that the claim of one airplane for every 605 shots only includes "those batteries that brought down one or more planes."

Aerial Fire Patrol on the National Forests

By PAUL G. REDINGTON

District Forester, California District, U. S. Forest Service

The first use of the airplane in detecting and combatting forest fires was in the summer of 1919 when aerial patrols were operated by the Air Service, U. S. Army, in cooperation with the Forest Service over the National Forest of California and Oregon. The work that season was extensive, rather than intensive. It was largely experimental and for the purpose of gaining experience and knowledge as a basis for more intensive work in the future. As a result of these trial patrols it was found that a more substantial plane with a larger capacity was necessary for the long flights, often at high altitudes, over mountainous regions where there were few opportunities to make safe landings in emergencies; that some means of quick communication between the planes and the ground would have to be developed; and that better maps were necessary to enable observers to report accurately the location of fires discovered. It was also brought out that here was a most excellent opportunity, not only for the worth-while utilization of surplus war equipment, but for the training of pilots and observers. The feeling that they were flying for a definite purpose on regular schedules that must be adhered to, and that their reports must be as nearly accurate as possible, gave a serious and business-like aspect to the work which is not usually attained in routine flying from training fields. The long flights over a rough country develop the resourcefulness and self-reliance which are so necessary in the making of a successful aviator. During the succeeding two seasons the training value alone was worth far more than the cost of operation of the patrols. Some of the best aviators in the country today at one time in their careers flew forest patrol. Included in these are Capt. Lowell Smith who led the round-the-world fliers, and Lieut. Russell Maughan, who made the dawn-to-dusk flight from New York to San Francisco.

Experience of First Season

During the winter of 1919-20 a meeting was held at March Field, Calif., which was attended by selected Forest Service officers. The purposes of this meeting were to establish closer contact between the personnel of both services; to give forest officers an opportunity to see something of aviation, of which they knew very little; and to work out plans for conducting the patrols the following season. Radio was given due attention and the use of carrier pigeons was also considered, although nothing practical came of the latter idea.

For the season of 1920 Congress provided a special appropriation for this work and the patrols were extended and made more intensive. DeHaviland 4B planes, with a fuel capacity sufficient for four hours or more were used and have continued in use to the present time. They were equipped with radio sending sets. Receiving sets were installed at the ground bases of the patrols. The flying time for this season totalled 3500 hr., with from two to four patrols daily operating from each base. Regular schedules were established. These varied somewhat but most of them required that a plane leave its base at 9:30 in the morning, stop at a subbase for lunch, and return by another route in the afternoon.

The longest patrol route was about 400 mi. for the round trip. The personnel was rated on the efficiency with which the schedules were maintained and the promptness and accuracy with which the location of fires was reported.

In the winter of 1920-21 a school of instruction was held at Mather Field, Calif., on a much larger scale than the meeting of the previous winter at March Field. Instruction was given to both the Forest Service and Air Service personnel in radio, aerial mapping, methods of reporting fires, organization, etc. The Congressional appropriation was continued in 1921. Special maps of a convenient size, showing only the information that would be of value to the observers, were prepared. The use of radio was greatly extended. The planes were equipped with sending sets, the patrol bases had both sending and receiving sets, and receiving sets were installed at the headquarters of the Forest Supervisors throughout the National Forests. The latter were manned by amateur operators employed by the Forest Service. These young men were enthusiastic, took their jobs seriously, and delivered excellent service.

In 1921, as well as in the preceding years, excellent cooperation was received from local communities. Not only were landing fields provided but quarters for housing the personnel were constructed without expense to the Government. The usual form of organization consisted of a commissioned officer in charge of each base, Air Service pilots, observers, and mechanics. The pilots were mostly cadets, although a great deal of flying was done by officers, particularly where the bases were located at Air Service fields. Occasionally Forest Service officers acted as observers. A forest officer was stationed at each base to act as liaison officer.

Results of Three Year's Work

The experience of these three years demonstrated that from a strictly fire control standpoint, operations on such a large scale were not justified. Daily patrols required a lot of unnecessary flying. The maps were not all satisfactory. A large part of the forested areas covered by the patrol had not been mapped in detail and for some regions maps of sufficient accuracy could not be prepared for reporting the location of fires correctly. This is of extreme importance since, in a rough country a slight error in giving the location of a fire may cause hours of delay in getting men to it and may mean the difference between a small fire and a big one, involving the loss of thousands of dollars in damages and cost of extinguishing. Excellent work was done by the planes in reconnaissance over large fires and by special patrols immediately after electrical storms and during periods when, because of haze and smoke, visibility was poor and the range of vision of the ground lookouts limited. Many differences of opinion as to the proper place for aerial patrol in a fire control program were also ironed out. The "doubting Thomases" who are slow to take up anything new, now realized that the airplane can fill a very important place in the campaign against forest fires, while those who at first had had visions of a more or less complete revolution in fire control practices had to admit that they had been a little too optimistic. The airplane does not replace any of the standard practices for the prevention and suppression of forest fires. The Forest Service still continues to maintain its organization of rangers, guards, patrolmen and lookouts on high peaks, and its ground communication and transportation systems. The airplane, however, renders an additional service by furnishing information which makes the work of the ground forces more effective and results in direct savings in the expenditure of funds for fire fighting and a reduction of damage losses.

An Example

A good illustration of this occurred on the Santa Barbara National Forest in July of the present year. A fire was burning in the back country. The ranger in charge of the fire on the ground had ordered additional men and supplies to be sent in over a given route. While these were being assembled the Forest Supervisor made a flight over the fire in a plane. He found that the direction in which the fire was burning had changed since the ranger's last report and that it would be necessary to divert the men and supplies and attack the fire from another angle in order to keep it from entering into a highly inflammable area where it would be

very difficult to control. Immediately upon landing he put his new plan into effect. Subsequent developments proved that he was right. By a flight of one hour and twenty minutes a saving of at least $10,000 in fire-fighting expenditures was effected.

No special Federal appropriations were available for the seasons of 1922-23-24 but some flying was done through the courtesy of the Air Service and the cooperation of State and private interests.

Beginning July 1, 1925, a Federal appropriation of $50,000 has been provided and it is hoped that hereafter this appropriation will be available annually. Five bases have been established, each of which has two DeHaviland planes, two pilots and three mechanics, with the exception of Griffith Park which has one plane and pilot and two mechanics. The planes, with necessary spare parts and repairs, are furnished by the Air Service. The Air Service has also detailed an officer, Lieut. Lloyd Barnett, to act as liaison officer and to assist the Forest Service in supervision of the work. All other expenses, including the employment of pilots and mechanics, are borne by the Forest Service. The pilots are selected Reserve Officers and the mechanics have all thorough training in the Air Service. The five bases and the Reserve Officers assigned to each are: Spokane, Wash., Lieuts. N. B. Mamer and R. F. Freng; Vancouver, Wash., Lieut. S. D. Priestly; Eugene, Ore., Lieuts. A. R. DeGarmo and A. R. Loomis; Mather Field, Calif., Capt. N. W. Potter and Lieut. P. A. Andert; Griffith Park, Los Angeles, Calif., Lieut. C. N. James.

Profiting by the experience of previous years, flights this season are made only when there is a specific purpose to be accomplished. The planes are held in readiness, serviced, to take off on short notice. Flights are made immediately after thunder storms to pick up lighting fires, and during hazardous fire periods over "blind" areas that do not come under the direct vision of ground lookouts, or when smoke and haze make visibility poor. Reconnaissance flights are made over going fires to obtain information for the better direction of the ground forces. Special observers are not employed but the observing in each case is done by the local Forest Service officer over whose district the flight is being made, since he is entirely familiar with the topography of the country and knows best what information it is desired to obtain. The usual procedure is for the pilot to fly with a mechanic to some field as near as possible to the scene of operations, leave the mechanic there and take up the local forest officer. Since conditions may require that the plane remain several days, there is always work for the mechanic. In times of emergency, trained forest officers who are urgently needed on fires are transported by plane to distant points.

The radio is not being used this year. Forest officers are not as a rule qualified in sending and receiving by code. Operators would have to be employed which would mean an additional expense that would hardly be justified, particularly since it would often be impracticable to have the operators and equipment immediately available in an emergency in isolated localities. Messages are dropped from the planes or 'phoned upon landing. What is needed in the way of radio equipment is a telephone sending set that can be installed in a plane and by which messages can be broadcast and picked up by the ordinary receiving sets that are now a standard article of furniture in every household. The sending radius need be only a few miles and it is hoped that before long such equipment can be made available for forest patrol use.

Race Notes

Free entries for the New York 1925 Air Races to be held at Mitchel Field, L. I., Oct. 8, 9, 10, 1925, close at midnight, Sept. 7. All entrants whose entry blanks and fees are received before this date have their entry fee refunded if the entrant starts in the race.

25 per cent penalty entries close Sept. 14, 1925.

50 per cent penalty entries close Sept. 21, 1925.

Pilots in the "On to New York Race" will land at Mitchel Field and immediately register at Contest Committee Headquarters where their credentials and log of flight will be inspected by the officials in charge. Should any of these pilots be contestants in other events, they will notify Contest Committee Headquarters and obtain credentials. After checking in, all pilots will proceed to Curtiss Field.

The Curtiss Aeroplane & Motor Co. of Garden City will supply free lodging to visiting officers and civilians. The second and third floors of the Executive Building of the factory are being furnished with beds, showers, etc. The restaurant at the factory will be open at all times. There will be continuous free bus service between the factory and both Curtiss and Mitchell Fields.

New Farman Bomber

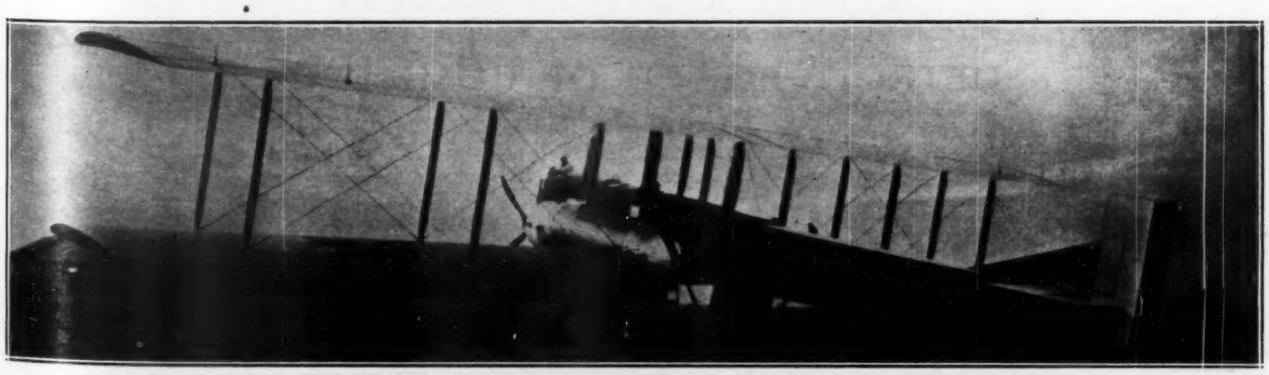
The Farman company has recently produced a new four-engined bomber known as the Bn4 Super-Goliath. This machine follows the general lines of the military Goliath and is fitted with four Farman 500 hp. engines arranged in two tandem pairs on the lower wings. The machine was tested by the Service Technique de l'Aeronautique with the following results.

Total weight of the machine empty was 15,400 lb. The load carried for these tests was 10,030 lb.

Flying with all four engines the following performances were made: Speed: 113 m.p.h.; Climb: To 3,300 ft. 5 min.; to 6,500 ft. 10 min. 31 sec; to 10,000 ft. 17 min. 30 sec.; to 13,000 ft. 27 min. 42 sec.; to 17,000 ft. 52 min. 30 sec.; Ceiling: 19,200 ft.

Flying with three engines (one engine entirely stopped, not throttled) the performance was as follows: Climb: To 3,300 ft. 5 min. 51 sec; to 6,500 ft. 13 min. 3 sec.; to 10,000 ft. 23 min. 57 sec.; to 13,000 ft. 38 min. 24 sec.; to 14,000 ft. 45 min.

The BN4 climbs with any one of the four engines completely stopped, and will fly horizontally with two engines completely cut out. The fuel capacity, which is 2,800 liters (740 gal.) permits a cruising range with normal speed of 10 hr.



The Farman four-engined heavy bomber

PILOTS!

No "Verboten" Signs at this Show

America's first Commercial Reliability Tour for the Ford Trophy starts from Detroit September 28th; covers 10 cities and finishes at Detroit October 3rd.

This is strictly a Commercial Show.

All aviators will have free run of the field and the Aircraft and Accessory Manufacturers' Exposition which will be held at the same time.

Your ship will be at your disposal, and gas and oil will be available at all times.

Program includes night shows; a $2,500 balloon race; jumping balloons and continuous flying.

At the Aircraft Exposition, held on the field, you will be in touch with every company making airplanes and accessories. The next time you need ships, parts, instruments or clothing, you will know where to purchase them.

The public will be admitted to the field without charge.

You are cordially invited. No parking charge will be made for your ship

DETROIT AVIATION SOCIETY

and

DETROIT BOARD OF COMMERCE

Detroit, Michigan

To Manufacturers of Aircraft and Accessories

You are invited to exhibit your products at the first Annual Aero Exposition, at the Ford Airport which will be held in connection with America's first Commercial Airplane Reliability Tour for the Ford Trophy, September 28 to October 3, 1925.

Letters of invitation have already been forwarded to you and 207 other manufacturers.

Adequate space for the display of your products will be provided without cost, other than transportation charges. The public will be admitted free to the Airport for the Reliability Tour, the Exposition, your exhibit, night flying demonstrations, a $2,500 balloon race and other interesting features.

The flyer wants to know all about your product. He wants to see it demonstrated, to know its price, and to learn where and how to buy it.

And the flyer will attend! Pilots and mechanicians are expected from all parts of the Continent.

You should be here with an attractive exhibit and intelligent representation, in order that your company may gain all advantages of this great opportunity at a time when all flying interests are assembled.

Write immediately for complete information

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AIRPORTS AND AIRWAYS

Curtiss Field, Long Island, News

By Warren J. White

Inspired by J. E. Whitbeck's new gas-stretcher, M. M. Merrill, Curtiss pilot at their Garden City Field, has invented and perfected a device destined to revolutionize the airplane. It is called the Multiple-Zoomer, and as the name implies gives a number of zooms where it was possible to have only one before. Casey Jones in his little racing Oriole came almost to a dead stop before the hangars after cutting the motor. Quickly he pulled his Multiple-Zoomer and fairly leaped over the hangars.

This remarkable device can be readily detached and used to shine shoes, block hats, mow lawns, wash clothes, row a boat, etc. In short it is a little wonder, a gem, and Casey says, "Ask the man who runs one." But Merrill cautiously whispers, "No, we may want to sell them some day." It is odd to see the many Multiple-Zoomer equipped ships leaping about the field to give their motors a rest.

* * *

Last week, E. P. Lott, Fairchild Aerial Camera Co. pilot, stationed at Curtiss Flying Field, landed in soft ground in the wilds of New Jersey. As he rolled to a stop a group of curious spectators gathered to inspect the ship. Lott left the ship in the hands of Cameraman Russell, and dashed off on an errand. Presently he returned, started the motor, warmed up, and was all set to give her the gun when a perturbed gentleman stepped from the crowd and excitedly demanded how Lott was going to get off.

"Oh, I'm going off straight ahead into the wind," Lott calmly replied.

"Yes, I know," the man howled as a strain of perplexity furrowed his brow, "but what about that," he continued as he pointed to the tail of the ship.

Lott inquired as to the cause of the man's trouble and agitation.

Nervously, the man answered with a question, "Why, yer—yer—yer exhaust pipe—how yer goin' to go with it stickin' way down in the sand like that."

Lott then explained the function of the tail skid, gave her the gun and got off to the accompaniment of a laugh from the amused spectators.

Fort Wayne, Ind.

By M. K. Riddick

Flight B Field is now a stopping point for airways ships. This field is 2.5 mi. north of the center of Ft. Wayne. Oil and gas and phone are on the field and a stock of supplies is expected very soon. C. Gorrell of the Rickenbacker sales agency brought a Hisso Oriole up from Johnson at Dayton and is doing considerable flying. Frank O'Neill brought a plane up from Vincennes to sell to a local business man, but the deal was not closed. A successful aerial circus was held recently at the Sond Point Field, south of town. Six ships and a large crowd were present.

The city has purchased a field a half mile north of Flight B Field. This gives Ft. Wayne three fields. Flight B Field now has 11 students and a new hangar. Local enthusiasts are building a monoplane. It looks like a cross between the T2 and the NC4 but it ought to fly at that. A Niles Aircraft Co. plane visited the field recently and the pilot made the suggestion that they make a weekly or bi-weekly trip here and we connect up with Dayton, which is running a service to Cincinnati and Columbus. Then if Chicago, Detroit, Indianapolis put feeders out to us we will soon have the country covered with air lines. We are ready to do our bit.

One local pilot wants to know what Cy Caldwell says or does when he is informed confidentially that "I would like to ride, if I could keep one foot on the G— (you know the rest)." If some one will think of a snappy answer this will advance aviation two years and save many a pilot from insanity. The author read of Caldwell's real estate deal. He himself used to own a snappy ship, a pilot's uniform and go about purchasing real estate. He persevered until there was no dope to patch the wings and only a pair of overalls left in the wardrobe. In irony he painted on the ship "The Aerial Hobo." After that farmers with keeness of perception stopped selling him real estate and started inviting him to dinner and he began to prosper again. The moral is there, if you wish to take it, and no charge for using the title.

Also this leads up to the point that some one ought to think up and broadcast some signal so that farmers could invite a pilot down to dinner. A person standing in the yard waving a large red or white rag or table cloth would be sufficient. The red one would mean a pick-up lunch and the white one chicken or something fine.

New England News Notes

By Porter Adams

The Registrar of Motor Vehicles, Frank A. Goodwin, acting under the authority given him by the Massachusetts State Aircraft law, on July 3 revoked the registration of two airplanes at the Boston Airport. The inspection which led to the revocation of the registration was made by Lieut. R. L. O'Brien, O.R.C., state aircraft inspector, and Lieut. A. E. Jones, A.S., instructor of the Massachusetts National Guard.

* * *

For some time past Boston has heard reports that Major Gen. Clarence R. Edwards, former commander of the Yankee Division, and other prominent citizens of Boston, were interested in the establishment of a company to operate lighter-than-air-craft. New interest was given to the matter with the publication on Aug. 9 of the information that a conference had been held with President Coolidge following which it was announced that the company, known as the Airways Corporation, had requested the lease of the Los Angeles from the government for experimental purposes and that the plans contemplated a daily schedule between New York and Chicago to be covered in 12 hr.

According to the report the proposed rate of mileage would be ten cents a mile or seventy-five dollars for the trip. If this proved successful by using the Los Angeles in the experimental stages, the company hopes to extend the service with a faster airship to include Boston, St. Louis, Detroit and Omaha.

The three men most prominently mentioned in connection with this development when the plan was laid before President Coolidge and Secretary Hoover, are General Edwards, Herbert Satterlee, former assistant secretary of the Navy; and John Hays Hammond, Jr. It is understood that Owen D. Young of the General Electric Co., has been requested to become head of the corporation, which is reported as being organized for fifty million dollars.

(Mr. Young has since publicly stated that he will have no connection with the airship company.—*Editor.*)

* * *

The Army staged a quick and successful response after the announcement of the record made by Lieut. R. D. Thomas, U.S.N.R.F., of the Naval Air Station, Squantum, last week, when Lieut. Crawford H. Hollidge, Air Service Reserve, flew from the Boston Airport a total time of 75 hr., exceeding the previous high mark made by Thomas by almost 25 hr. Lieutenant Hollidge lives in Milton and is now beginning the second week of his annual fifteen days active duty at the Boston Airport. Practically all of the time was spent on flying cross country during which he visited almost every town and city of New England within flying radius of Boston, and landed only at the airport for fuel.

Three of the days were rainy, foggy and cloudy, and Lieut. Robert J. Brown, Jr., commander of the Boston Airport, said of this accomplishment, "The Army rejoices in his achievement and congratulates him. I join with him in his personal thanks to the ground personnel of the Boston Airport, particularly to Chief Mechanic Jack Breen, whose willing and expert services enabled the Boston Airport to make such a record while carrying out the regular flying program of the command last week and yet have all three of our JN's on the line ready for flying again today."

The total time for all Naval and Military aviation in the vicinity of Boston the past week was 202 hr. 58 min., of which the Navy at Squantum had 78 hr. 18 min.

* * *

It has been just learned that Bangor, Me., is to at last have a large and modern flying field. The land known as the Morse Field, where two years ago the Martin Bombers under command of Colonel Mitchell landed during their trip over Maine, has been leased by Robert Lowell, who is organizing a company to be known as the Northern New England Aviation Society of Maine. A charter has already been applied for from the state. It is announced that the field will be marked according to government specifications and hangars will be erected as soon as possible.

L. I. Sound

By F. R. Golder

During the past two weeks the Curtiss Metropolitan Airplane Co. has afforded daily delivery service, with the exception of Sunday, for the *Daily Racing Form* of its daily dope and results sheet at Saratoga. This sheet usually leaves the press on East 32nd St. about 6:00 p. m. and is immediately rushed by truck to 81st St. and Hudson River where it is put aboard a Loening Air Yacht piloted by Clifford Webster who has it at the Lake Saratoga shore for the *Racing Form's* delivery truck there at 8:00 p. m., or on an average of one hour and forty minutes. Mr. Webster has accomplished this delivery every night in spite of very bad rainy and cloudy weather when the very poor visibility has forced down land machines which could not take the chance of crashing into trees.

The same machine has been used each day and the same pilot so that is obvious that Mr. Webster must also fly through from Saratoga the following morning regardless of weather conditions in order to be ready for the next evening flight up and all servicing of the machine must also be taken care of in the interval. This Liberty engine, a Ford, is now well over a 150 hr. run.

This company has also very recently afforded the following service. Dr. Wm. Thompson and friends to Otsego Lake and return with Dr. Thompson's mother. Mr. Trebold, of the Guaranty Trust Company, with friends to Lake Saratoga and to Nantucket. Grover Loening with friends to Newport, Southampton and Oyster Bay. M. A. and S. A. Jones to Watch Hill. Andre Pillot to Saratoga and return. W. K. Vanderbilt and guests including Barclay Warburton, at his estate in Northport.

Indianapolis News

By E. M. (Ting) Thompson

After four years we are beginning to realize our dreams of years past. We have heretofore been satisfied with ordinary passenger business with about one or two planes on the field. We now have three colorful planes on the field and a rare assortment these make. They are Goody Weaver's Canuck, with his customary blue; Karl Bedenmeister's Waco, with a scarlet fuselage and gray wings and Ted Hauser's Jenny, natural color with two lavender stripes slashed down the fuselage just in front of the rear cockpit. There soon will be on the field a reconstructed Avro with an orange fuselage and ivory wings belonging to Gordon Lackey.

* * *

Ernest Cutrell who flew one of the Weaver Air Service's blue Canucks until it was sold recently has lately been flying Hauser's Jenny.

* * *

The commercial fliers here at Indianapolis have met with a city ordinance that prohibits other than government planes from flying over the city. Local pilots formerly carried passengers over the city, but since a kick was raised we have been unable to do so. It is understood that in other cities where there was a similar ordinance that some arrangement was made whereby pilots could fly over the restricted area without being law-breakers. Indianapolis fliers would appreciate any offering or suggestions made to help solve this problem.

* * *

The management of Weaver Air Service Field of Indianapolis invites aviators flying over this section of the country to land on their field. It is located on the southeastern section of Indianapolis, five miles from the center of town east, and then about one mile south. The field is going to be better marked in the near future and fellow fliers are assured of a cordial reception.

* * *

Goody Weaver, general manager of the only organization of its kind in Indianapolis has an excellent roster of students this year. Gordon Lackey, Oliver Willets, Bob Gardner, Clarence Fouty, Johnny Beck and his wife, Mrs. Weaver and the author of these notes. Several of the students are already flying solo and the others soon will be.

Travel Air "Custom Made" Plane

A specially constructed "Travel Air" has just been completed by the Wichita, Kans., company of that name for Vern Brown of Perry, Okla.

The new machine has an Aeromarine 6 engine equipped with electric starter and generator. The new plane has the recognized Travel Air characteristics of slow landing, especially quick take off. The top speed is 110 mi./hr., the cruising speed 90 mi./hr. and the cruising range 400 mi.

Another special four place "Travel Air" is being constructed for a resident of Wichita, which the prospective owner has ordered as a transportation vehicle for himself and family.

Travel Air 3-seater with Aeromarine 6 Engine, electric starter and generator completed for Vern Brown, of Perry, Oklahoma.

Monmouth, Ill., News

By Ralph B. Eckley

The Breguet owned by the Mid-West Airways Corp., was sold on Aug. 13 to the Niles Airways Co., which is establishing a flying field at Niles, Mich. The big plane was purchased from the Yackey Aircraft Co., was rebuilt in the shops of the local company and was in excellent condition when delivered to the new owners. A new plane is to be purchased at once by the Mid-West company.

* * *

John Livingston, pilot-manager of the Mid-West Airways Corp., took a fishing trip in northern Iowa two weeks ago in his new Thomas Morse OX5 engined plane, which he purchased earlier in the summer and completely rebuilt. The plane performs beautifully and averaged 85 mi./hr. on a cross country trip from Chicago last month.

* * *

Glenn Romkey, of Burlington, Iowa, who formerly operated his own flying service, is now a pilot with the Mid-West Airways Corporation and has been assisting in passenger carrying and student training. "Al" Wilson, well known parachute jumper, has also been making the local field his headquarters this summer.

* * *

Capt. William H. Murphy, Mr. Shangrow and Lieutenants Lockwood and Crumrine, all of Dayton, Ohio, landed at the government field here on July 30 in two Army planes, a DH and a CO6. Captain Murphy is in charge of the radio laboratory of the Signal Corps attached to the Engineering Division at McCook Field, and Mr. Shangrow is an assistant radio engineer of the Air Service. They left the next day for McCook Field.

The two planes were guided to the Field here by the radio beacon signals which they were able to pick up at Indianapolis, more than two hundred miles away. They were assisting the Development Division of the Air Mail at Monmouth with radio work.

* * *

Residents of Monmouth and vicinity had an opportunity to see one of the Army's big blimps on Thursday, Aug. 6, when the TC7, from Scott Field, circled very low over the government field here. The ship was en route to Sterling, Ill., where it took part in an American Legion celebration. Arrangements for the visit here were made by Lieut. Frank M. McKee and Lieut. Harold R. Wells of Scott Field, who landed at the Field in a DH the day before.

The blimp arrived at 9 o'clock in the morning and was in command of Lieutenant Axtater, assisted by a crew of five enlisted men. It was impossible to make a landing, but the ship was brought close to the ground so that the crowd of 3,000 people that gathered could get a close view of it. Two of the government's mail planes and a plane from the Mid-West Field acted as escorts while the blimp was in this vicinity.

* * *

Harvey S. Mummert, of Hammondsport, N. Y., designer of the Aerial Mercury produced by the Aerial Service Corp., has been in Monmouth several times during the summer making minor changes in the design of the Mercury, for which two different sets of wings were provided. On his last visit early in August the large lower wings were replaced and steel wire installed in place of cable flying wires.

* * *

Oren P. Harwood, who was employed during the spring as a mechanic by the Mid-West company, is piloting a Standard for the Duff Air Service of Galesburg, Ill. He had the misfortune to crack a lower wing in a forced landing a short time ago and is now giving the ship a complete overhauling at the Monmouth Field.

* * *

Ford Studebaker, a radio engineer from McCook Field at Dayton, Ohio, was here for several days last month assisting in the radio beacon experiments that are being conducted by the Air Mail Development Division. F. W. Dunmore, from the Bureau of Standards, was also here for a short time to assist in the work. Mr. Dunmore produced the original beacon outfit several years ago before the Army took up the work.

The radio beacon experiments are being conducted with a new DH radio plane, which was rebuilt at the Maywood shops of the Air Mail under the direction of Eddie Richards, who has visited the field here occasionally. The plane was fitted with a receiving set at McCook Field and was flown here three weeks ago by Frank Burnside, Air Mail test pilot.

The amplifiers of the radio outfit are carried in the fuselage just back of the pilot's seat and the controls are on one side of the instrument board, where they can be easily adjusted by the pilot in flight. Tests are being conducted with the plane between Maywood and Monmouth and are reported to be satisfactory.

* * *

Business at the Mid-West Field has been rushing this season, receipts to date are ahead of the entire year of 1924. Several flights have been made with people to high altitude to assist their hearing. In several instances marked improvement was noticed.

* * *

The Field at Monmouth now looks like a real airport, with the Air Mail hangars and the Mid-West hangars, a high power broadcasting station, and ten to fifteen ships on the field each day.

Robert Starkey of Clendale, Calif. and his Airster, a number of which have been built and sold by the Kinner Airplane and Motor Corp. of Glendale

Denver, Col., News

By J. A. McInaney

Hear Ye ! Hear Ye ! All pilots, would be pilots, parachute jumpers, wing walkers, and those about to solo—The "Mile High City" is going higher ! Not satisfied with being up 5280 ft. while standing on terra firma, the Denverites are all greatly excited about flying.

There is, without doubt, a certain thrill in trying to breathe in this high altitude. Some folks with the gamblers instinct become wealthy betting with their neighbors that they can't get the next breath. Sometimes they lose, but more often win.

And now the fittest, who have survived, are going up still higher and betting they can stay up one hour, where there is no air at all. It is claimed that "If you can fly in Denver, you can fly anywhere" and if you don't believe that, come out and try it.

* * *

Chief Pilot Joe Hammer of the Alexander Aircraft Co., of Denver, who has been with the Colorado Airways, claims that the law of gravity does not apply here either. The writer, a ham pilot, has been leveling off about 50 ft. too high in landing and floating straight down slowly, which is Hammer's reason for such a statement.

Truth is surely stranger than fiction. If you saw a cartoon of two aviation fans trying to start a plane, one in the wrong seat and the other turning the prop backwards, you wouldn't think it true to Nature. Yet that happened here not so long ago.

The Alexander Aircraft factory now have sixteen men at work and have six cadets taking the ground course. They will have facilities for turning out one of the new "Eagle-rock" planes a day as soon as their new building is completed. Denver activities are growing.

Avalon, Calif., News

The airline which has been operating between the mainland of California and Avalon, Catalina Islands is now entering on its fifth year of operation. It is said that more than eight thousand passengers have been carried. R. D. Bacon is the manager of the company and Joe Keown the pilot.

A little comparison of time required to make the trip to the mainland, by air and by water, is interesting.

One of the two steamers in regular service between here and the mainland makes the trip one way in two hours, the other takes fifteen minutes longer.

The flying boats require twenty-two minutes for the trip one way, effecting a saving of over an hour and a half each way, which gives the vistor three more hours to enjoy his stay, or the business man the same extra time for his purpose.

In addition to the cross-channel flying boats, A. C. Burns (F.A.I. license No. 370) has a three-place Curtiss flying boat, which carries passengers every day, from the time he warms up his Hisso in the morning, until it gets too dark to give the passengers their money's worth of looking at Avalon Bay from the air. A number of residents are among the passengers listed by Mr. Burns—in fact, are regular repeaters.

The flying done here is all safe and sane, get there and back, business-like performing; the only time that stunting is seen is when a stray scout from the Navy gets over town, and feels like he must turn over a few times, thereby giving a number of people the impression that the ground is good enough for them.

Niles, Mich.

The Niles Airways Co. have practically completed work on the equipment of their field. The field is located on the south side of the concrete road running east and west, which is just out of the city limits on the north-east, about a half mile due south of the M.C.R.R. terminal. The 30 by 90 ft. hangar is now practically completed. In addition to this building the company has an office and a repair shop. The following will be painted on the roof of the hangar in large letters, Niles Airways Company. A gasoline pump will be installed and a supply of good oils and fuels maintained at all times.

At the present time the company is operating two Jennies for the instruction of their seven students and short passenger hops. Capt. J. F. Donnellan, formerly of the R.A.F., will be in charge of all flying instruction. The engine repair shop will be under the control of Mr. Murphy. A six passenger cabin plane is expected in the near future and the company is contemplating running a Detroit-Chicago line with it.

Argentina

The Province of Cordoba, Argentina, reports Trade Commissioner George S. Brady, has increased the subvention to the company operating the air mail and passenger service between the cities of Cordoba and Villa Dolores from 4,000 to 7,000 pesos ($1,615 to $2,826)) per month, on the condition that an additional service to Rio Cuarto be inaugurated. The Villa Dolores service, which was begun in January of this year, covers the 75 mi. to Cordoba in 50 min., whereas the journey by rail is 375 mi., with three changes of train. Two Junker 185 hp. planes make three round trips weekly.

Boise, Idaho

By Clarence Eckert

Formal selection of an aviation landing field for Boise together with recommendations to the city council for its improvement will probably be made by the municipal air board very soon. Just as soon as the board can secure estimates on the cost of grading several sites, cost of hangar construction and other expenses it will begin drafting formal report which will be presented to the council. An option will be taken on the most favorable site and recommendations will be made to the city council on the manner of acquiring it so that the commissioners can go forward as rapidly as possible to provide Boise with airport facilities.

The board feels that Boise should not go into the matter of a landing field half way but should secure the best possible site close in and fix it up so that airplanes can land on it with safety and have hangar and mechanical accommodations waiting for them. It was emphasized that a close-in field would not only be much better than one located several miles out but it would also give Boise additional advertising as many of the municipal fields of western cities are located all the way from two to ten miles from the center of the city. Time will be a great factor in passenger and mail traffic, the board believes, and its members are going into the question most thoroughly in order to make the wisest selection.

R. S. Fogg in Curtiss Seagull at Lake Winnipesaukee, N. H.

First Rural Free Delivery by Air

Winnipesaukee Lake, N. H., has the honor of being the first district in which Rural Free Delivery of mail has been handled by air. The lake is of considerable size and for some time the summer residents along its shores have been complaining about the slowness of delivery of their mail matter. Through the efforts of the Winnipesaukee Lake Region associates acting through Postmaster W. D. Chandler of the local post office a contract was obtained from the First Assistant Postmaster general at Washington. The route was sponsored by Congressman Fletcher Hale of Laconia and Senator George H. Moses.

J. O. Ashley, railway mail superintendent of White River Junction, Vt., and Chief Clerk Larrington of the railway mail service at Washington were brought to Winnipesaukee to investigate the complaint of lake folks that mail service was not up to standard. The result of the investigation was the recommendation of air service as the best way of correcting the fault.

The flying is being done by R. S. Fogg in a Curtiss Sea Gull powered with a Hispano motor. The run is only some 43 mi. in length but by motor boat it took over 5 hr. Fogg and his mechanic Clifton Kempt do it in 1 hr. 10 min. including ten stops to discharge and take on mail. All incoming mail is delivered before seven and outgoing mail catches an 8:05 train for Boston. The plane has been carrying from 200 to 400 lb. of mail and newspapers. The contract is to run from Aug. 1 to Sept. 7.

"Bob" Fogg was an instructor at Love Field, Tex., during the war and has since been in commercial aviation having some 2,000 hr. of flying to his credit. He estimates that 2000 pieces of mail are brought back daily by the plane to the local postoffice. The air mailman points with pride to the fact that where it formerly took three days to receive an answer to a letter mailed from Wolfeboro, the answer can now be received in 24 hr., owing to the speed and efficiency of the plane. A letter is taken on the morning trip, placed on the Boston train a few hours later, and is delivered in the afternoon. If an answer is sent immediately, it is carried back the next morning.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE TRAINING CAMPS

Mitchel Field

Mitchel Field is required to take care of the active duty training for the Reserve Officers for the 1st and 2nd Corps Area. This means that the field is kept busy all summer. This year, in addition to this large number of reserve officers a very large number of missions in connection with the Coast Artillery were required by the War Department. During the month of June, for example, 49 were carried out.

The organization of the Reserve Officers' camps is as follows: Camp Commander, Major Wm. Hensley, Jr., A.S.; Camp Executive, Maj. W. L. Moose, A.S.; Camp Adjutant, Lieut. D. D. Watson, A.S.; Camp Surgeon, Major I. B. March, M.C.; Camp Chaplain, Capt. Earl Weed, C.C.; Senior Instructor, 1st Lieut. J. C. Kennedy, A.S. After Aug. 8, Major Hensley was relieved by Lt. Col. B. D. Foulois.

During the period of July 19 to Aug. 2, the following reserve officers were on active duty: Capt. Philip W. Watson, J.A.P.; Capt. Neil J. Cronin, A.P.; 1st Lieut. Edward H. Holerman, A.P.; 1st Lieut. Raymond P. Palmer, A.O.; 1st Lieut. Sidney A. Riley, A.P.; 1st Lieut. William H. Laughlin, J.A.P.; 1st Lieut. William R. Taplin, J.A.P.; 1st Lieut. George W. Maxim, J.A.P.; 1st Lieut. James F. Downey, J.A.P.; 1st Lieut. Walter E. Cleveland, J.A.P.; 1st Lieut. John J. Burns, A.P.; 1st Lieut. Robert H. W. Lowell, J.A.P.; 1st Lieut. Austin E. Robinson, A.O.; 1st Lieut. Bland D. Shuttleworth, J.A.P.; 1st Lieut. Ephriam F. Ingals, J.A.P.; 1st Lieut. Byron R. Switzer, A.P.; 2nd Lieut. Donald V. Atwater, J.A.P.; 2nd Lieut. Frederick Robie, J.A.P.; 2nd Lieut. Harry Rammer, A.O.; 2nd Lieut. Clyde C. Jakway, J.A.P.; 2nd Lt. Roland H. Calden, A.O.; 2nd Lieut. Leo J. Abbott, A.O.; 2nd Lieut. LeRoy A. Boutwell, J.A.P.; 2nd Lieut. Fred W. Rowell, J.A.P.; 2nd Lieut. Robert A. Slater, J.A.P.; 2nd Lieut. Williard E. Gray, J.A.P., 2nd Lieut. Ralph M. Kendall, J.A.P.

And in the period of Aug. 2 to Aug. 16, the following reserve officers were on active duty: Major Gordon Reel, J.A.P.; Capt. Ralph L. Hartman, J.A.P.; Capt. Donald S. Polar, A.P.; Capt. Paul E. Barden, J.A.P.; Capt. Charles G. Slauson, J.A.P.; Capt. George H. Durar, J.A.P.; Capt. John M. Hayward, A.P.; Capt. Malcolm G. Spooner, J.A.P.; Capt. Rex F. Gilmartin, A.P.; 1st Lieut. Robert J. Farnum, A.P.; 1st Lieut. Henry S. Manly, A.P.; 1st Lieut. James J. Murphy, A.O.; 1st Lieut. Daniel H. Pratt, J.A.P.; 1st Lieut. Donald D. Arnold, A.P.; 1st Lieut. Albert E. Flood, A.P.; 1st Lieut. Donald McIlhiney, J.A.P., (Editor, AVIATION); 1st Lieut. Paul W. Ward, J.A.P.; 1st Lieut. Greff Allen, J.A.P.; 1st Lieut. Ben Berkowitz, A.P.; 1st Lieut. Gerald V. Kelley, A.P.; 1st Lieut. Joseph L. Weiss, A.P.; 1st Lieut. John F. Egan, J.A.P.; 1st Lieut. Douglas R. Goodale, J.A.P.; 1st Lieut. John F. McNeill, A.P.; 1st Lieut. Alexandria P. Schenck, A.P.; 1st Lieut. Benj. Nasief, A.P.; 1st Lieut. Paul G. Wehle, J.A.P.; 1st Lieut. Albert J. Wehrell, A.P.; 1st Lieut. Charles E. Lynch, 2nd Lieut. Leon S. Allen, A.P.; 2nd Lieut. Henry I. Baldwin, A.O.; 2nd Lieut. F. J. Schwaemmle, J.A.P.; 2nd Lieut. Henry W. Stelle, J.A.P.; 2nd Lieut. Carl J. Sack, J.A.P.; 2nd Lieut. Henry B. Clark, J.A.P.; 2nd Lieut. John A. Crafts, J.A.P.; 2nd Lieut. Leon A. Hardy, J.A.P.; 2nd Lieut. Lawrence M Turner, A.O.; 2nd Lieut. Richard J. Bostick, J.A.P.; 2nd Lieut. Frederick A. Zender, J.A.P.; 2nd Lieut. James C. Burrhus; 2nd Lieut. William J. Jordon; 2nd Lieut. John O. R. Kelly, J.A.P.; 2nd Lieut. Franklin E. Place; 2nd Lieut. W. P. Darlington.

The program of instruction was very carefully prepared and was arranged so that the reserve officers were able to choose a specialty. During the morning there were three periods from 7:30 to 10:30, one of which was devoted to flying and the other two to a specialty. From 10:30 to 11:30 the officers attended either the field officers' or the junior officers' courses. The afternoon from 1:00 to 3:00 was given up to flying. The following gives the amount of time devoted to the various subjects:

RECAPITULATION

	Hours
Basic Course:	
Drill and calisthenics	5.5
Pistol instruction	1.5
Pistol range	3.0
Supply	1.5
Mobilization	1.0
The Infantry Division	1.0
Staffs	1.5
Promotion regulations, etc.	0.5
TOTAL	15.5
Field Officers Course:	
The estimate of the situation	1
Combat orders	8
TOTAL	9
Junior Officers Course:	
Types of military aviation	1
The Squadron, the Group and Auxiliary Units	1
The four types of aviation	1
The Divisional Air Service	2
The Corps Air Service	1
The Army Air Service	1
G.H.Q., A.S.	1
Resume. demonstrating work of the Air Service assigned a Field Army	1
TOTAL	9
Rated Officers' Basic Course:	
Buzzer	4
Radio (operation of plane sets)	1
Artillery observation	2
Bombing and camera obscura	1.5
Meteorology and aerial navigation	1
Observers' reports	0.5
TOTAL	10
Flying:	
Flying by each pilot during mornings	6
Morning flying includes: Precision flying, Formation, Camera gunnery.	
Flying by each pilot during afternoons	4
Afternoon flying includes:	
Cross country	2.0
Puff target as pilot	0.5
Puff target as observer	0.5
Camera obscura as pilot	0.5
Camera obscura as bomber	0.5
TOTAL flying by each pilot	10
TOTAL flying by each observer	9
Rated Officers' General Course: (Squadron Commanders Schedule).	
Armament including theory of aerial gunnery, camera, guns, bombing, M.G. range and traps	5
Engineering	1
Radio	1
Administration	4
Photography	1
TOTAL	12
Rated Officers' Specialty Course:	
Specialty (selected)	12
TOTAL	12
Non-Rated Officers' Course:	
Specialty (selected)	36
TOTAL	36

REQUIRED AND OPTIONAL COURSES

All Officers: take "Basic Course".

All Officers: choose between "Field Officers' Course" and "Junior Officers' Course." Limitations: Applications for "II" should have basic knowledge of tactics.

All Rated Officers: take "Rated Officers' Basic Course."

All Rated Officers: choose between "Rated Officers' General Course" and "Rated Officers' Specialty Course." Those taking a specialty choose one subject listed below under "Specialty Courses." Limitations: Observers may select only subjects designated "O."

All Non-Rated Officers: take "Non-Rated Officers' Course." They choose one subject listed below and designated under "Specialty Courses."

Specialty Courses.

Squadron Commanders (including Operations and Tactics).

For Field Officers, Captains and selected Lieutenants only).

Engineering	ON
Armament	ON
Supply	ON
Photography	ON
Administration	ON
Communications	ON

"Rated Officers" as used herein includes only officers who have been officially designated as pilot or observer (A.P., A.O., R.M.A., J.A.P., B.O.) and have filed copies of such orders at this Headquarters.

A feature of the camp from Aug. 2 to 15 was parachute jumping by reserve officers. The following officers made jumps: Capt. Paul E. Barden, Lieut. Leon S. Allen, Lieut. Donald D. Arnold, Lieut. Henry B. Clark, Lieut. Benj. Nasief

and Lieut. John O'R. Kelly. Permission was received from the War Department for these jumps to be made. These jumps were "pull-off" jumps and were made from the wings of a Martin Bomber. All of these jumps were very successful, the officers landing within the limits of the field and none of them being injured.

Rockwell Field

Pilots of the 3d Division, Air Service, U.S.A., in camp at Rockwell Field, Coronado, Calif., have been busily engaged in training members of the Air Service Reserve. Machine gunnery and bombing practice have received considerable attention. Machine guns are fired at targets on the ground and at aerial targets towed by other planes. Bombs (practice-type dummies) are dropped on targets on the ground. The ground target for bombers consists of a ring marked on the ground, 12 ft. in diameter, with two other concentric rings, of 25 and 50 ft. diameter.

The training ceased on Aug. 17, and preparations were made for the return to Crissy Field, San Francisco.

Brooks Field

Twenty-five Air Service Reserve officers and four enlisted reservists have just completed fifteen days of active duty training at Brooks Field, Tex. These officers were members of the 103rd Division Air Service, of Colorado, Arizona, New Mexico and 90th Division Air Service of Texas. They were trained on the new primary training plane the PT1, and are the first class of reserve officers to use the new plane. All were enthusiastic about the plane and liked it far better than the old "Jenny" of war time service. One feature the reserve officers especially liked was the accessibility of the controls. There was no necessity for the shortest man to stretch his legs in giving full rudder. A simple arangement took care of that. All pilots were permitted to fly solo. A few advanced sufficiently to fly Voughts and DH's. However, unit training was not undertaken for the reason that it required the fifteen days to bring the pilots back to where they could solo. If an additional fifteen days had been authorized unit training could have been undertaken and tactical missions performed. The camp commander recommended in his final report that in the future the training period be extended to a minimum of thirty days. Unit training for Air Service reserves cannot be undertaken during a fifteen days period, unless the reserve officer is given an opportunity to fly regularly and frequently during his inactive status. To be able to do this, flying facilities should be made available for reserve officers at centers of population where reserve officers may fly at any time they desire.

Army Air Orders

First Lieut. Hugh C. Downey, A. S., A.S. Eng. Sch., to report to Com. Off., McCook Field.

First Lieut. Sam L. Ellis, A.S., Selfridge Field, to Brooks Field.

First Lieuts. Homer B. Chandler, A.S., Dayton D. Watson, A.S., Kenneth Garret, A.S., 5th Obs. Sqd., and John C. Kennedy, A.S., 1st Obs. Sqd., Mitchel Field, to Brooks Field.

Staff Sergt. Fred A. Monshower, A.S., France Field, C.Z., to Selfridge Field.

First Lieut. John Y. York, jr., A.S., Kelly Field, to Scott Field.

First Lieut. William A. Gray, A.S., Kelly Field, to Langley Field.

Sec. Lieuts. Paul H. Kemmer, A.S., Marshall Field, and Milton J. Smith, A.S., Fort Bliss, to San Francisco, sailing on transport Oct. 14 for Hawaiian Is.

Capt. Warner R. Gates, A.S., First Lieut. William J. Flood, A.S., Sec. Lieuts. Reginald R. Gillespie, A.S., and Wilfred J. Post, A.S., Scott Field, to Brooks Field.

Capt. Oliver S. Ferson, A.S., A.S. Eng. Sch., McCook Field, to report to Commanding Officer, McCook Field.

Major Leo A. Walton, A.S., McCook Field, Capt. Dudley B. Howard, A.S., Kelly Field, Capt. Elmer E. Adler, A.S., McCook Field, and First Lieut. Merrick G. Estabrook, jr., Washington, to San Francisco, sailing Nov. 20 for the Philippine Islands.

Upon completion of tour of foreign service following officers A. S. assigned as indicated: Major John C. McDonnell, Wilbur Wright Field; Capt. Morris Berman, Washington; First Lieut. Robert V. Ignico, San Antonio.

First Lieut. Benedict A. Coyle, A.S., Maxwell Field, to Brooks Field.

First Lieut. Junius A. Smith, A.S., Kelly Field, to Fort Sam Houston.

Major Harold A. Strauss, A.S., San Antonio, to Scott Field.

First Lieut. William Edward Huffman, A.S. Res., McCook Field, and Sec. Lieut. John Frank Bolgiano, A.S. Res., Dayton, to active duty Scott Field, reverting to inactive status Sept. 13.

Capt. Samuel Herbert Anderson, A.S. Res., Seattle, to active duty Coronado, Calif., reverting to inactive status Sept. 12.

Capt. John Robert Irwin, A.S. Res., Los Angeles, to active duty Coronado, reverting to inactive status Sept. 13.

U. S. NAVAL AVIATION

Shenandoah's Itinerary

The itinerary of the United States Navy airship *Shenandoah* from Lakehurst over the middle western states the first week of September, covering approximately 3000 mi. was announced recently by the Navy Department.

The Commanding Officer of the *Shenandoah* has been directed to follow the itinerary laid down by the Department subject to changes which might become necessary due to weather conditions, or other unforseen incidents, which might arise to curtail the itinerary or to abandon it at any point.

The trip has been so arranged that the *Shenandoah* will fly over the cities at which State Fairs will be in progress as follows: Columbus, Ohio, Sept. 3; Des Moines, Iowa, Sept. 4; Minneapolis, Minn, Sept. 5; Milwaukee, Wis., Sept. 5; Detroit, Mich., Sept. 6.

Every effort has been made, taking into account the capabilities and limitations of the *Shenandoah*, to send the airship over the greatest possible number of cities in the middle west.

The *Shenandoah* will pass over the State Fairs during daylight with the possible exception of the fair at Des Moines. As nearly as can be determined now, the airship will reach Des Moines late in the evening of Sept. 4.

The *Shenandoah* will use the following route: Lakehurst, Philadelphia, Pa., Wheeling, W. Va., Zanesville, Ohio, Columbus, Ohio, Dayton, Ohio, Indianapolis, Ind., Lafayette, Ind., Springfield, Ill., Scott Field, Ill. (Belleville)—land and refuel. St. Louis, Mo., Kansas City, Mo., St. Joseph, Mo., Des Moines, Iowa, Boone, Iowa, Webster City, Iowa, Minneapolis, Minn., Menominee, Wis., Eau Claire, Wis., Black River Falls, Wis., Wautoma, Wis., Oshkosh, Wis., Fond du lac, Wis., Milwaukee, Wis., Kalamazoo, Mich., Battle Creek, Mich., Jackson, Mich., Ann Arbor, Mich., Detroit, Mich.—moor at mast and refuel. Toledo, Ohio, Sandusky, Ohio, Cleveland, Ohio, Akron, Ohio, Youngstown, Ohio, Clearfield, Pa., Lewisburg, Pa., Reading, Pa., Lakehurst.

Fort Hamilton, N.A.S.

The Naval Air Station at Fort Hamilton, New York, continues to record considerable flying time with only one N9 seaplane in commission. During the week ending Aug. 8, 76 flights were made with a total of 32 hr. 37 min. and during the week ending Aug. 18, 120 flights totaling 29 hr. 55 min. Seven aviation students were transferred on Aug. 15 to the Naval Air Station at Hampton Roads for advanced flight training. This station hopes to have some Vought UO1 seaplanes for use in the near future.

Navy Air Orders

Lt. Comdr. Charles G. McCord det. Nav. Aircraft Fact., Navy Yd., Phila., to U.S.S. Wright.

Lieut. George F. Chapline det. Nav. Acad., to Nav. Airef. Cent. Dist., McCook Field. Uncompleted portion orders May 16 revoked.

Lt. Frank D. Wagner det. Nav. Air Sta., Pensacola, to Nav. Air Sta., Anacostia.

Ens. Porter L. Loomis det. Nav. Air Sta., Pensacola, resignation accepted.

Pay Clk. Edward B. Parker det. Airef. Sqdns., Setng. Flt., resignation accepted.

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PUBLISHER'S NEWS LETTER

The intense interest that is being taken in air transport in all parts of the world brings most interesting facts almost daily. Communications from abroad where the airways are being encouraged through generous subsidies naturally give indications of progress that make Americans envious. We hear of "giant" airplanes being under construction for the Imperial Airways. The management evidently has in mind standardizing its equipment by using big three-engined machines for the cross-Channel services.

Over a thousand passengers are carried monthly and the freight amounts to over seventy-five tons. But what is perhaps of greater importance is the statement of the Imperial Airways that according to their records, over 87 per cent of the passengers carried in 1925 travelled in their machines in 1924—a striking evidence of the repeating possibilities of air travel.

* * * *

A list of the types of freight carried has in it some extraordinary items. Live dogs, whisky, artificial flowers, live show pigeons, asparagus, china vases, lizard skins, eggs for hatching, and fruit are some of the things that catch the eye as being out of the ordinary run of goods carried. The list also includes tin ware, gold watch cases, underclothing, pathological specimens, newspapers, gold, machine parts, gloves, marocain, straw plait, aluminum pistons, tools, slippers, pump sprays, clothing, platinum, gramophone records, whalebone, ball bearings, enamelled cowhides, silk, flowers, books, lenses, toilet cream, cotton, fish, wallpaper, milk, tennis balls and racquets, woolen goods, boots, silver, advertising matter.

Apparel, boots, and shoes, ironware, surgical instruments, photographic goods, motor parts, aluminum products, umbrellas, chairs, printed matter, tools, toilet requisites, pocket knives, twist drills, silk, velvets, cottons, razors, food products, manicure instruments.

Textile furnishing goods, machine parts, aero engine parts, newspapers, electrical drills, steel transmission chains, chassis parts, cricket bats and balls, fowls, petrol black, woollen goods, gold, flannel, roller bearings, radio crystals, watch parts, wireless materials, chemicals, printed labels, hats, waterproof garments, band cockades, water meters, steel tubes.

A particularly well informed correspondent writes that it is his opinion, based on the most intimate observation, that the number of miles flown per machine each year is not nearly so important as the load carried. Two of the leading air transport machines in Europe, the Handley Page-Rolls Royce W8B and the Fokker FVII using a Napier Lion engine can be made to pay if a full load is available each trip. The Fokker can fly for about 30,000 miles with only superficial inspection and the Handley Page requires detailed inspection only after 25,000 miles. In his opinion, an air transport service using either of these types or any similar machine, would of course have to have sufficient machines and engines in reserve to use whenever there were machines out of commission or it became necessary to change engines. Given these conditions a machine could be flown continuously until its time limit between inspections had expired; if full loads were forthcoming every trip, he is certain that the service would pay.

* * * *

Of course, as he points out the overhead charges for large staffs and high salaried officials would have to be cut to a minimum, and a regular flow of traffic would have to be assured. Unfortunately, it appears, the European Air Lines seem to find it necessary to have larger office and directional staffs that appear unwarranted when the very fluctuating traffic is considered.

Two special services were rendered which are worthy of special mention as indication of the kind of traffic that can be developed. One was that transportation of nearly $10,000,000.00 in bullion since April, 1924, and the other was the special service rendered to Swiss manufacturers who wished to have deliveries made in England before July 1, so as to avoid an increased duty. Thirty-two tons of dutiable silks and gold watches were transported during the last three days of June from Switzerland to Croydon, and not one user of the air service paid any of the new duties. It took only one hour to clear the goods through the Croydon airport which gave another advantage over ordinary transport.

* * * *

A year from now we ought to be recording similar news of American air transport companies, and not relying entirely for our enthusiasm on our Air Mail.—L.D.G.

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FOR SALE: Immediate delivery 1 Loening seaplane, 1 Curtiss seagull, 1 Standard J-1, K-6 motor. Attractive prices for quick sale. Lyhun Co., Inc., 412 West End Avenue, New York City.

DOPE—Clear acetate $1.00 per gallon. Wood filler 5c per lb. Altman Purchasing Syndicate, 249 Broadway, Buffalo, N. Y.

WANTED: Chief inspector on aircraft metal parts. Must have had previous experience same line. Address Box 375 AVIATION.

PARACHUTES for aeroplanes, balloons, rope ladders, new and used equipment; quick shipments. Specify weight. Wire or write. Established 1903. Thompson Bros. Balloon Co., Aurora, Illinois.

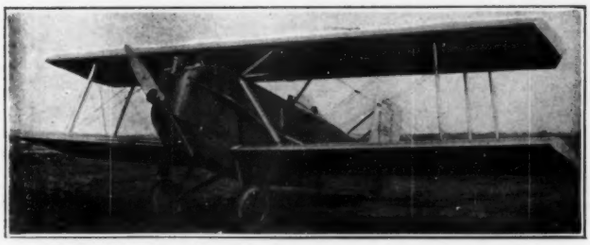
OX5 engine, slightly used, overhauled, complete with propeller, radiator, $200.00. Write your needs on other bargains. Inland Service, Rossmoyne, Ohio.

WANTED to buy one Laird Swallow must be A-1 condition and never cracked. J. Westfahl, Ogallala, Nebr.

FOR SALE: Aeromarine 39-B, fitted with landing gear, 3-place dual control. Just out of crate, $850.00; New OXX6 motor. Laird Swallow, 3-place, $1500.00, ready to fly away, OX5 motor. Both guaranteed to be in first class shape. Hills Air Service, P.O. Box 24, Vineland, N. J.

SPEED WITH SAFETY

Curtiss



CURTISS CARRIER PIGEON

Let the Operator Keep Faith with the Public

The public demand for the transportation of passengers, mails and express matter by the air route places a definite responsibility upon all those who are studying the problem of air operation.

There seems to be no question that companies now organized will receive the sympathetic support of the public in exact proportion to the judgment, experience and honesty which they exercise in their pioneer operations. The greatest care must be used in organizing along practical and conservative lines The success or failure of this enterprise will depend largely on two factors, personnel and equipment.

PERSONNEL. The personnel will be found available among that group of airmen produced by the war who are devoting their lives to the application of aviation to civilian needs.

EQUIPMENT. Obviously the Aircraft Operating Companies, not themselves designers or builders, must select their equipment from the best which the aircraft industry can supply.

The Curtiss Aeroplane & Motor Company, the oldest airplane and motor producer in the country, and the organization that has been the creative and productive source of the best military airplanes and motors, has directed its creative energy toward the commercial problem. It was the first company to design, build and test an airplane for the specific requirements of the Air Mail Service. The Curtiss Carrier Pigeon was at once accepted by the Post Office. The expert committee of the National Air Transport, Inc., after a coast-to-coast survey of available equipment, recommended the Curtiss Carrier Pigeon, and the company at once placed an order for a quantity of these machines.

As interchangeability of parts with consequent reduction in cost of maintenance was an important factor in the selection of the Carrier Pigeon by one company, so standardization of airplanes of one type and of one manufacturer by the Post Office and the leading operating companies will make efficient and economical operation possible. The use by all pilots of one type, the standardization of interchangeable spare parts for general distribution from Curtiss stores throughout the country, and the reduced price of planes and parts through centralized quantity production will make the Carrier Pigeon the standard commercial airplane. For "feeder lines" the Curtiss Lark, a smaller prototype of the Pigeon, will shortly be available.

CURTISS AEROPLANE & MOTOR COMPANY, INC.

GARDEN CITY, N. Y. BUFFALO, N. Y.

Wright 200 H.P. Aircooled Engines

OFFER THE FOLLOWING ADVANTAGES

to Air Mail Bidders

Cut the first cost of planes

The first cost of mail planes including new Wright Whirlwind J4 200HP engines is about half the average of the prices recently bid to the P. O. Dept. for mail planes with Liberties. Since the P. O. Dept. makes no guarantees on quantities of air mail the bidder must assume the probable average quantities of mail. A 600 lb. mail load with a Whirlwind is approximately 24,000 letters. If any of these branch lines average as much mail as this they should pay. If they average less why pay more for a large plane to run half empty?

Reduce quantity of planes and spare engines required

Spare planes and spare engines are one of the heaviest expenses of air mail transportation. The ease with which inspections, adjustments and minor repairs are made on Whirlwind engines reduces the quantity of spare engines and spare planes required. Every "stand by" plane and engine cuts into anticipated profits. Planes with Whirlwind engines are more profitable because they are ready to be In The Air more of the time.

Insure regularity of service

The mail planes must be *ready* to leave on schedule time. The turn around time is short. It takes only an hour to change a cylinder or grind a valve in a Whirlwind. Servicing bearings and other parts is proportionately as fast. The mechanic can do almost any job required between runs and Without Taking Engine From Plane.

Cost less to operate

The low cost in time and labor for engine inspection and repairs, the excellent oil and fuel economy (sometimes less than 8 gal. per hr.), the small quantity and reasonable price of spare parts due to the unit construction all make the Whirlwind engines economical to operate.

DURABILITY

A stock Whirlwind engine flew over 100 hrs. at *full throttle* and full RPM without replacement or adjustment of a single part or loss of revs. This is the equivalent of 300 hrs. of normal part throttle flying. Many of the 16 Whirlwinds with the Huff Deland Dusters are over the 100 hr. mark carrying their 600 lbs. of dust with a hard zoom each time the cotton patch is crossed. No greater durability test could be given airplane engines than this daily grind with heavy loads, heat, rain, bad fields, dust, constant take-offs, and operating hundreds of miles from their repair bases. Durability can only be built into an engine or an automobile by constantly improving such parts as are found to give trouble. This is a task of years. A stock production Whirlwind (then Lawrence) won the Marine Trophy at the Detroit Air Meet in 1922. Since then 4 new models have been made with hundreds of changes, most of them for durability.

Decrease liability of crashes

A corollary of engine durability is safety. Dependability next to low cost is the most important characteristic of any transportation equipment. The proved dependability of the Whirlwind engines is one of the best safeguards for safe flying. In the recent Hawaiian maneuvers one squadron of 18 Whirlwinds flew over 2,000 hours with only one forced landing and that due to a stoppage in the fuel tank line.

Give high performance

The saving in weight and resistance of the water radiation systems gives either better performance, higher ceilings, or MORE PAY LOAD.

Winter and Summer Flying

The air cooled Whirlwind engines are better for extreme hot weather flying. Many instances are on record when these air cooled in extremely hot weather were flying perfectly when water cooled could not fly because of boiling. In winter draining radiators, heating water, heated hangars are all obviated by the air cooled.

WARRANTY GUARANTEE

A rigid 90 day "new car warranty" goes with each of these commercial Whirlwind engines. This warranty when backed by a responsible company is a great measure of protection to commercial operators. This warranty has been and will be administered to give real protection.

Service to Customers

We assist our customers in servicing and learning their Whirlwind engines. If they have troubles we send our service men to learn the cause and correct it. This safeguards the purchaser and helps us continue the dependability development of these Whirlwinds. We keep three service men on the road instructing and assisting. When more are needed we will get them. Spare parts are readily obtainable.

With Whirlwind engines your problems are our problems. The Wright Co. can only grow as aviation grows. We will be as earnest a worker for the success of your line as you will be, for *your success is our success.* The advantage of using new engines, made by a strong company strengthened by an unbroken chain of 22 years' experience and which is working to make the Air Mail a National Success will be appreciated by all Air Mail Bidders.

AIR MAIL BIDDERS:—*Write for Bulletin 8A which contains detailed specifications, power curves and full data for these* ***Whirlwind J4 Engines.*** *State the route for which you propose to bid, the probable number of planes you will use, etc.*

WRIGHT AERONAUTICAL CORPORATION, PATERSON, N. J.